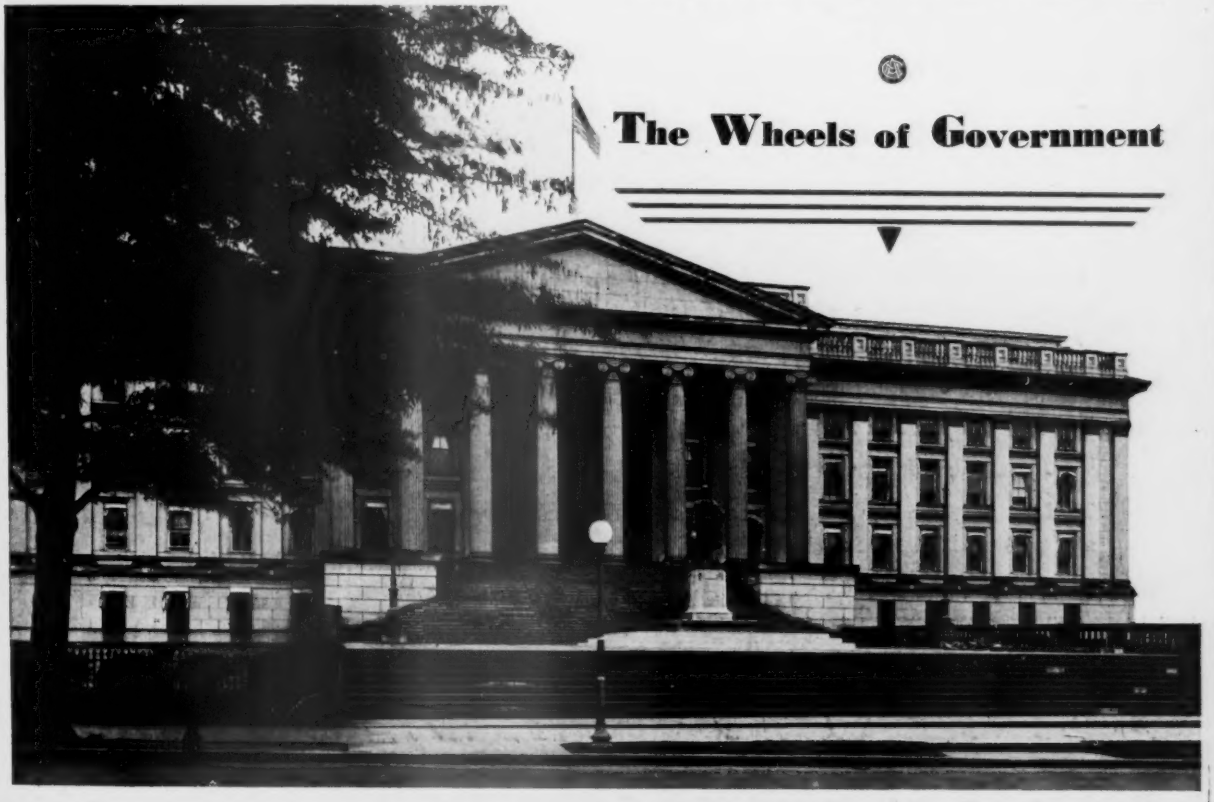
The MINING CONGRESS JOURNAL

SEPTEMBER
1931

War Policies in Taxation

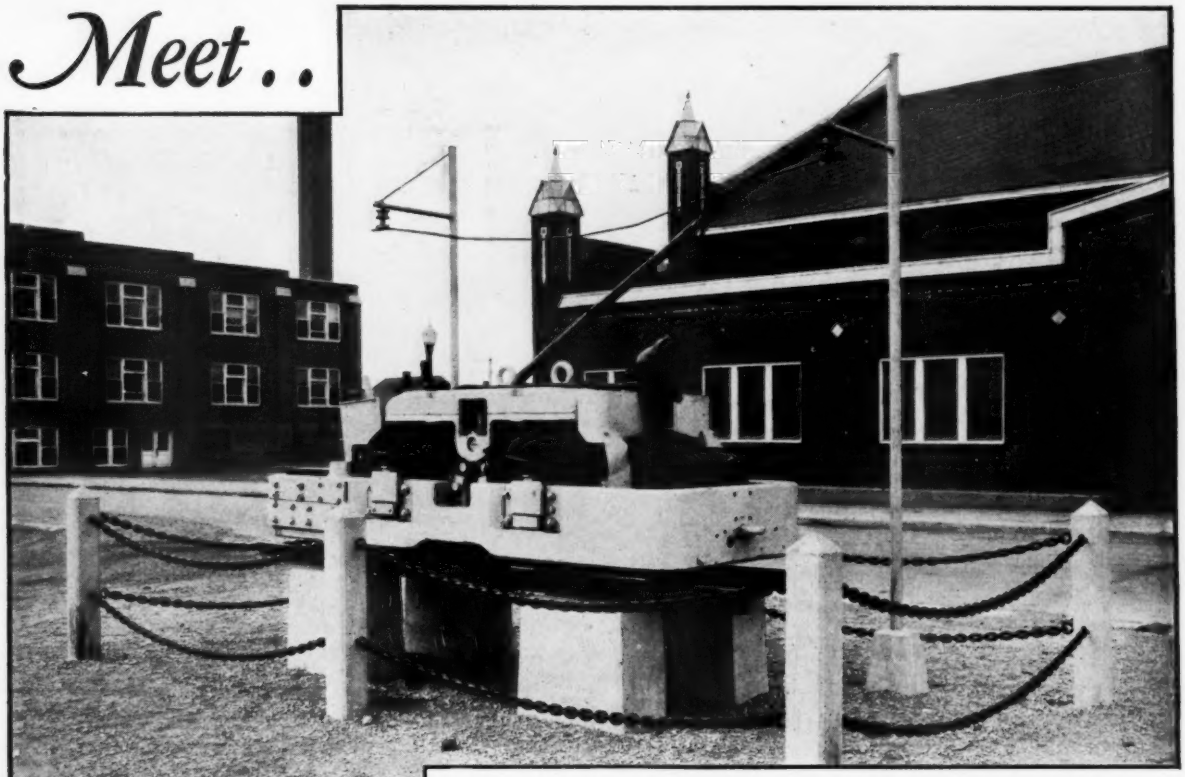
Modernizing Coal Mining

The Wheels of Government



The United States Treasury Building in Washington

Meet . .



"CHARLES SMITH"

"CHARLES SMITH" is a General Electric mine locomotive believed to be the third electric locomotive used in this country. It was installed by the Union Pacific Coal Company, Rock Springs, Wyoming, on May 16th, 1892, and was named for the man who was its last regular operator.

"Charles" was born of good stock 'way back in the early "nineties," weighed nine tons, wore 30-inch-gauge shoes, and covered rails at a speed of eight miles per hour, thanks to one shunt-wound motor with a single field coil.

So hard did "Charles" work — he handled more than 7,000,000 ton-miles of coal; and at such low upkeep — he was the lightest eater of maintenance expense in the mine; that the officials were reluctant to retire him at the prime age of 34 years — yet he had earned it.

So they rewarded him by enrolling him in the Old Timers Association, exalted him on a pedestal, and placed a bronze tablet on his base to commemorate forever his pioneer distinction and remarkable service record.

To-day, as in the past, the G-E monogram on an electric mine locomotive is a mark of dependability — the initials of a friend.

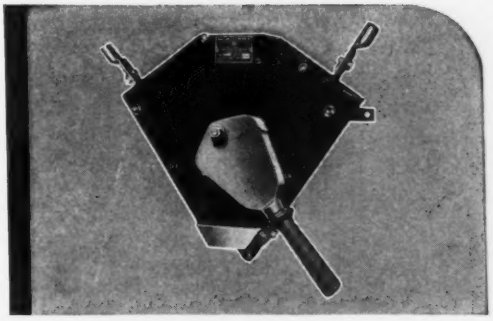
JOIN US IN THE GENERAL ELECTRIC PROGRAM, BROADCAST EVERY SATURDAY EVENING ON A NATION-WIDE N.B.C. NETWORK

360-66

GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

NO SPATTERING, NO HISSING, NO BURNING of HANDS and FACE



O-B SAFETY SWITCH

Will last indefinitely with few or no replacements of parts. Listed, page 29, O-B New Products Supplement No. 4.

A HISS; a blinding flash; molten copper spattering over hands and face—these are too frequently the dangers of disconnecting a heavily loaded d. c. circuit with the old style, open-type switch.

♦ O-B has designed a safety switch which successfully protects both the operator and switch when the switch is opened under load. This new safety switch has a quick-make, quick-break feature. Full opening and full closing are always assured. A blow-out coil snuffs out the arc. The mechanism is fully enclosed in an insulated, fire-proof case. There is no spattering, no hissing, no burning of hands and faces when this switch is opened. There is freedom from personal injuries and freedom from production delays to be found in the use of this switch, which far-seeing and straight thinking men will be quick to investigate. Do you wish additional information? Ohio Brass Company, Mansfield, Ohio; Canadian Ohio Brass Co., Limited, Niagara Falls, Canada.

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THE MINING CONGRESS JOURNAL

VOLUME 17 SEPTEMBER, 1931 No. 9

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Practical Operating Men's Department

METALS

Portable Mine Fans at Globe, Arizona

COAL

Trends Toward Better Mine Management

Published Every Month by The American Mining Congress, Washington, D. C.

Edited under the supervision of James F. Callbreath, Secretary of The American Mining Congress

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No. 12 of a series of advertisements on "How Superlative Quality is Built into Roebling Wire Rope"

World's largest rope-making machine

"World's Largest" does not begin to reveal the capability or tremendous capacity of this giant —a Roebling machine that takes huge strands of steel wire and "lays" them into finished rope.

In rope diameter, the capacity of this machine is practically unlimited. It can make ropes of a diameter far beyond commercial use. In fact, about its only limitation is a capacity to turn out a maximum of 80 tons in weight of rope *in a single length* without reloading. And such a load exceeds the normal capacity of carriers.

This "closing machine", one of many of various types used by Roebling, is an excellent example of Roebling's unsurpassed rope making facilities. With such a machine, rope of the largest diameters can be handled without the slightest danger of over-stressing. The result is — higher rope efficiency, higher all-around quality.

Incidentally, all the large suspender ropes for the famous George Washington Memorial Bridge, spanning the Hudson River, were made in the machine shown.

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NAME TITLE

FIRM

ADDRESS

As Fast As Coal Can Be Cut and Shot

These Conveyors Will Load It Out

The Jeffrey 49-E Face Conveyor and the Jeffrey 57-A Room Conveyor, working in combination, can load out coal as fast as the face can be cut and shot.

The 57-A handles coal from the room face to entry—the 49-E is used as a face conveyor on room faces and pillars and is also used for rib drawing and in cross cuts.

Both are sectional—therefore they are adjustable in length.

57-A Room Conveyor (Above)

The 57-A is usually placed along the rib, receiving the coal from the 49-E which is across the face, and delivering it to the entry where the coal is discharged into cars.

Conveyor consists of head and tail end, 6-foot or 12-foot sections, as many as desired, for extension—maximum length is 300 feet.

Top and bottom pans are separable. They are joined with pin and clevis, insuring quick and easy shortening and lengthening of conveyor. Their flexibility enables the conveyor to conform to uneven bottoms and slight curvatures.

Spoked hub at tail end is keyed to tail shaft—insertion of bar in one of the holes makes it easy to slacken chain when making or breaking a connection.

Capacity of approximately 30 tons per hour is sufficient to handle all the coal that men at the face can load into it.

The Jeffrey 57-A Sectional Conveyor affords a swift and economical means of loading out coal at the face.

Send for Bulletin No. 502-A.

49-E Face Conveyor (Below)

Placed across the face this conveyor discharges into the 57-A Sectional Room Conveyor. The head and tail ends together constitute 12 feet of conveyor—intermediate sections are 6 feet long—providing a conveyor of any desired length up to 84 feet.

Sections are conveniently bolted together and easily added or removed. The conveyor is light enough to be slid forward with bars as the face advances. It is rigid and sturdy—strong enough to stand impact of falling coal. Side next to face is low, easy to load by shovel or roll lumps onto.

Single strand chain permits easy lengthening and shortening. Upper flanges of steel channel side frames hold down carrying flights and prevent climbing and tension of chain.

Made in standard or low types.

Send for Bulletin No. 493-B.

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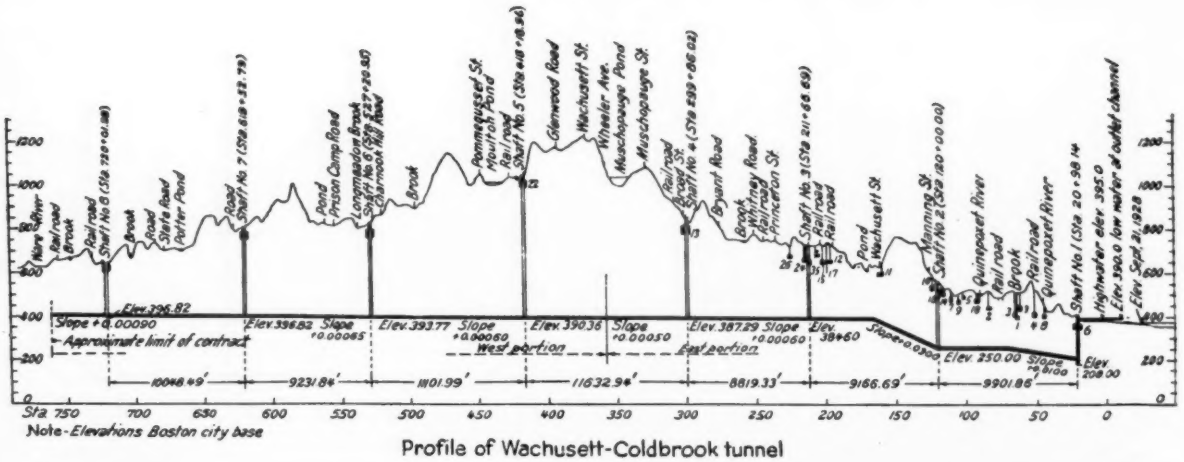
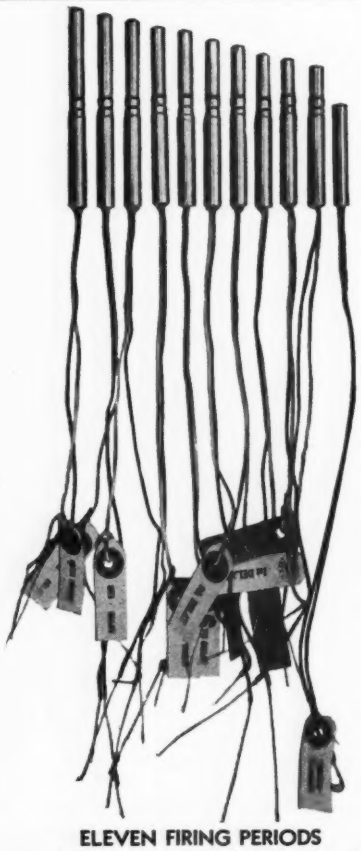


Profile of Wachusett-Coldbrook tunnel



ELEVEN FIRING PERIODS

As the Giant Instantaneous Electric Blasting Cap can be used in the same circuit with these new Delays—eleven firing periods are obtainable.

Tunnel Contractors and Coal and Metal Mine Managers can well afford to study the Bureau of Mines Information Circular 6399, which deals with the construction of the Wachusett-Coldbrook Tunnels for the Boston Metropolitan District Water Supply Commission as accomplished by the West Construction Co. Every phase of the construction of the series of shafts and tunnels amounting to approximately fourteen miles of underground work, is discussed in this Circular. From a blasting standpoint, the discussion and sketches dealing with the type of drill rounds and the explosives and blasting supplies employed are of special interest.

Giant Gelatinous Explosives of 40% and 60% strength in cartridges twelve inches long and one and a half inches in diameter, and the Giant All-Metal Delay Electric Blasting Caps, were employed exclusively in this work. Approximately 3,000,000 pounds of explosives and 500,000 electric blasting caps and delay electric blasting caps were used.

This was the first industrial work in which Giant All-Metal Delay Electric Blasting Caps were used, and their satisfactory performance from every standpoint at this operation has led to their widespread adoption in all similar classes of work.

Let the Giant Service Man prove the advantages of Giant All-Metal Delay Electric Blasting Caps to you. Write nearest branch.

GIANT

TEN DELAYS . . . ELEVEN FIRING PERIODS are obtainable with GIANT DELAY ELECTRIC BLASTING CAPS . . . *plus the demonstrated advantages of:*

Absolutely accurate timing—one-half second interval between delays—sufficient for a sprinter to run 15 feet—certainly sufficient therefore for complete disruption of burden by blasting—overlapping eliminated;

All-metal construction—no fuse used;

Rigid construction—less possibility of damage from tamping in bore holes;

10th delay can be wholly imbedded in a cartridge 8" long;

Timing accuracy not affected by degree of confinement;

Actual contact between electric blasting cap and explosive—more positive detonating effect—less noxious fumes than caused by combustion of rubber tubing in the construction of the old type delays;

Adequate water resistance for all tunnel blasting;

Positive flame filter—permits use with ANY grade of dynamite without danger of burning the charge of explosive;

The GIANT Delay Electric Blasting Cap is made in either No. 6 or No. 8 strength. Either strength supplied in ten delays; each delay properly identified with waterproof tag. Every delay is equipped with one white and one blue wire to safeguard against errors when making parallel connections.

At the option of customers: The New Giant Delay Electric Blasting Cap is supplied with either plain or enamelled wires; with or without the GIANT patented Shunt Safety Attachment.

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EXPLOSIVES
The GIANT POWDER CO., Con.

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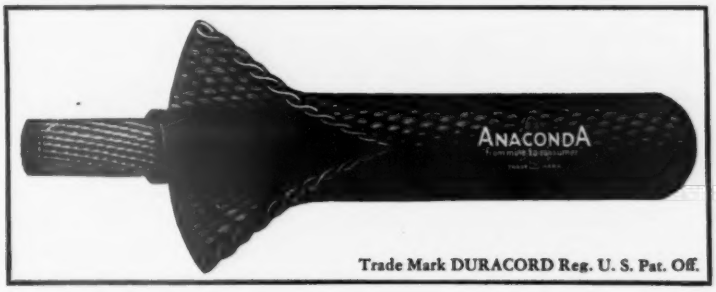
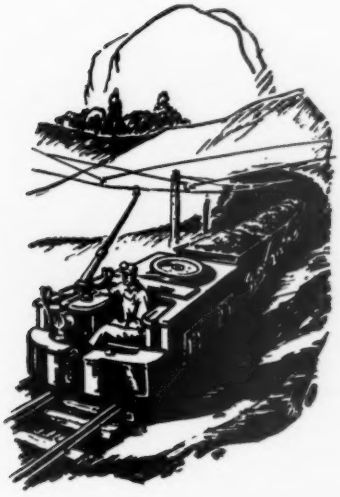
Anaconda Duracord



Trade Mark DURACORD Reg. U. S. Pat. Off.

—designed especially for gathering locomotive cable



BUILT to withstand the roughest kind of usage, Anaconda Duracord outlasts any other Gathering Locomotive Cable. Its tough woven cover is *cemented* to the rubber insulation, to prevent raveling and to keep the rubber from creeping. Its *record in service* proves it the most economical to buy...Order Anaconda Duracord *by name* from your jobber. Sample on request.

Other Anaconda products include trolley wire, magnet wire, flexible cords, weather-proof wire, power cable, varnished cambric wire, armored cable—*in fact, wires and cables for every electrical requirement.*

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from mine to consumer
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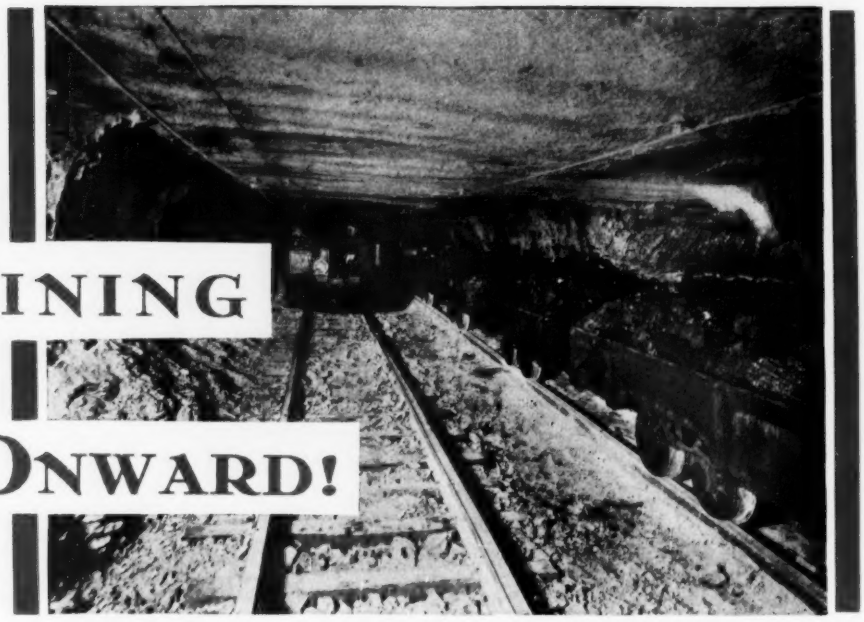


COAL MINING MOVES ONWARD!

MINING methods are rapidly changing. Mining machinery is constantly improving. Only the mine that keeps in step with current developments in mine modernization today, will find itself among the leaders of tomorrow.

■

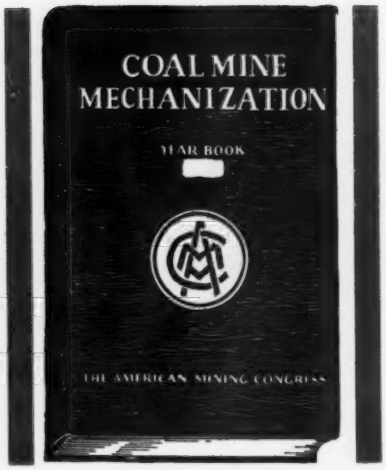
The new American Mining Congress **MECHANIZATION YEAR BOOK**, soon ready for distribution, will contain the most complete information obtainable upon the subject of coal mine modernization.

■

Based upon actual operating practice and observation, it will not only thoroughly cover every phase of coal cutting, drilling, shearing, loading, haulage, and transportation, but in addition will present graphic comparisons of tonnage productions and descriptions of the many different kinds of operating equipment.

■

Use the coupon below for your reservations.



The American Mining Congress,
841 Munsey Bldg., Washington, D. C.

Please send me copies of the new American Mining Congress MECHANIZATION YEAR BOOK. $3.50 per single copy. $2.50 each for 5 or more.

NAME TITLE

FIRM

ADDRESS

"GREATER" SAFETY

"WE are firmly of the opinion that the improvement would not have been possible were it not for the introduction of the mechanical loader, with the more intensive supervision possible under that plan of mining." We quote from the paper delivered by Mr. W. J. Jenkins of the Consolidated Coal Company of St. Louis, before the 1931 Coal Convention of the American Mining Congress. Mr. Jenkins said that the tons per compensable accident had changed from 4,101 in 1927 with hand loading to 7,930 in 1930 with mechanical loaders, that their men are happier and that profits are greater. Further details are found in Mr. Jenkins' Paper. Joy 5 BUs are the loaders used at this property. Let our engineers analyze the savings and advantages of Joy loading at your mine.

JOY

JOY MANUFACTURING CO., Franklin, Penna.

MEET US IN MISSOURI

One of the most important metal events of the year will be the joint meeting of the Western Division of the American Mining Congress and the American Institute of Mining and Metallurgical Engineers to be held at Joplin, Missouri, in the heart of the great Tri State lead and zinc district the latter part of this month. ■ Some of the foremost mining men in America will take an active part in the interesting 4-day program . . . a program which will concern itself with lead, zinc, gold, silver and copper, and which will consider the major problems before these great units of the Mining Industry today. ■ In addition to the meeting itself, an excellent opportunity will also be afforded to inspect the many places of mining interest in the region near Joplin, such as the Pittsburg, Kansas coal-stripping operations, the Seneca, Missouri tripoli deposits, the retort zinc smelters, the 125,000 H.P. Empire steam plant, the 10,000 H.P. Commerce Diesel-engine plant, the Cooperative Clinic at Picher, etc. ■

You are cordially invited to attend.

■

Among the speakers on the program will be S. L Mather, Vice President, The Cleveland-Cliffs Iron Company, and President, The American Mining Congress; Robert E. Tally, Vice President and General Manager, United Verde Copper Co., and President of the A.I.M.E.; W. Mont Ferry, Vice President and Managing Director, Silver King Coalition Mining Company, and President of the Silver Producers Association; Frank H. Probert, Dean of the Department of Mining, University of California; C. K. Leith, Chairman, Department of Geology, University of Wisconsin; A. W. Dickinson, Chief, Tax Division, The American Mining Congress; H. Foster Bain, Secretary, A.I.M.E.; J. F. Callbreath, Secretary, The American Mining Congress, and others See complete program on page 445 of this issue.

■

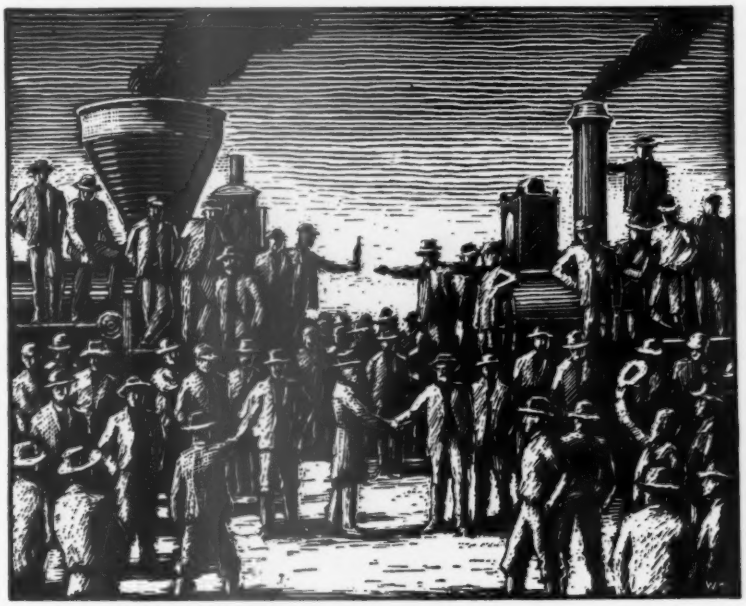
WESTERN DIVISION OF THE AMERICAN MINING CONGRESS

and

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS

JOPLIN ■ MISSOURI

SEPT. 27, 28, 29, 30, 1931



Meeting of the Union Pacific and Central Pacific at Promontory Point, Utah, May 10, 1869, to form the first transcontinental railway.

The Race *of the* Rails

In the spring of 1868 began the final dash in the race between the Central Pacific and the Union Pacific to build the greatest length of transcontinental railroad. The boast of General John Stevens Casement, that the Union Pacific would reach the California border before the Central reached the Nevada line, led Charles Crocker, in charge of the Central's construction, to bet $10,000 that he'd lay ten miles in a day.

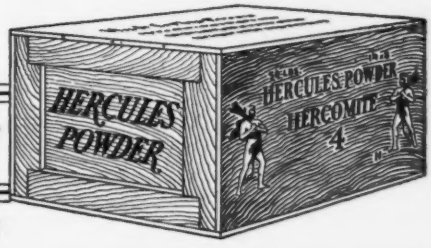
At 7 a.m., April 28, Crocker gave the signal. Five trains brought up materials. A pair of rails was caught up by workmen and placed on the ties, which had been laid in advance. Spikes, fishplate fastenings, bolts, and ballast followed. The Central was marching at the rate of 114 feet, five pairs of rails, to the minute. Six miles had been covered by 1.30. After an hour's rest, work was resumed and by 7 p.m. the ten-mile goal had been exceeded by 1,800 feet. Crocker had won his wager before 5,000 witnesses.

THAT first linking of the Atlantic and Pacific by rail was almost coincident with the production of the first Hercules dynamite, which has been a worthy aid to our railroad builders. The improvement of railroads since then is no more remarkable than that of Hercules explosives.

Hercules research has recently produced the Gelamites which have been so successful and economical that they are rapidly replacing Gelatin for most work where Gelatins up to and including 60% strength were previously needed. Wherever this replacement is made, savings from 10% to 20% in explosives costs usually result.

Another product of Hercules research is the Hercomite series of explosives. These are taking the place of ammonia dynamites for railroad construction, quarrying, and general use at savings up to 30% in explosives costs.

Constant research for better explosives values; insistence on high quality; rigid control in manufacture; exhaustive field tests of new explosives; and advisory service to assist in determining the best methods of application—these are features of Hercules explosives and service that assure full, honest value today and portend future advancement in keeping with industrial progress.



HERCULES POWDER COMPANY
INCORPORATED

934 KING STREET WILMINGTON, DELAWARE

A-18

Here is the man you want to sell!

He is the "Typical Reader" of the Mining Congress Journal ■ He is an executive of some great mining company. He is intensely interested in every kind of mining equipment. He has the *power to buy* if he so desires ■ But he is not always an easy man to sell ■ He must have facts, reasons, proofs, before he buys, yet his time is limited. He is hard to see ■ The story of your product in the Mining Congress Journal will reach him under the most favorable conditions ■ When he is leisurely reading his favorite business magazine and in his most receptive state of mind.

Shooting
with du Pont GELATIN
in the famous Bunker Hill Mine

(*Above*) *Miners drilling in the Hooper Tunnel of the Crescent Mine.*
(*Below*) *Entrance to the Kellogg Tunnel—the main tunnel of the Bunker Hill Mine.*

THE BUNKER HILL MINE is the largest producer of lead-silver ore in the State of Idaho, and is one of the few companies in the United States that mine, mill-smelt, refine, manufacture and sell lead ore and lead products.

Mine operations are conducted through the 10,000-foot Kellogg Tunnel . . . the main tunnel of the mine. Production is about 1,400 tons of lead-silver ore per day.

The explosive used exclusively in the operation is du Pont Special Gelatin 35%. This explosive was chosen because of its plasticity — its waterproofness — its uniformity —and because it produces a minimum of harmful fumes.

Du Pont Explosives were also used by the Bunker Hill & Sullivan Company in building the Hooper Tunnel in their Crescent Mine. This tunnel is 5,000 feet long and was driven through rock known as Wallace Quartzite, which is of medium hardness, with interposed harder ribs. Du Pont Special Gelatin 60% did the work efficiently and thoroughly.

For specific information relating to selection and use of du Pont explosives, address

DU PONT
REG. U.S. PAT. OFF.

E. I. DU PONT DE NEMOURS & COMPANY, INC.

Explosives Department . . . Wilmington, Delaware

Page Coal and Coke Company saves $21,125.00 per year with 860 Timken Bearing Equipped mine cars

Nielsen Survey shows that Timken Bearings pay for themselves in 2.6 years.

As the result of an impartial survey recently conducted by the A. C. Nielsen Company, Chicago, independent research engineers, a definite, unbiased comparison of performance and costs between Timken-equipped and plain bearing mine cars operated under identical conditions, has been made available to all mine operators.

The survey took place at the mine of the Page Coal & Coke Company, Pageton, West Virginia, and was made in collaboration with Mr. E. H. Evans, General Manager of the coal company.

Its extent and thoroughness may be judged from the fact that the engineers' report covers nine closely typewritten pages.

Among the mass of valuable information contained in the report are the following outstanding findings:

1 Since using Timken-equipped mine cars exclusively, the Page Coal & Coke Company has saved $21,125.00 per year.

2 The investment in Timken Bearing equipment is returned to the company every 2.6 year.

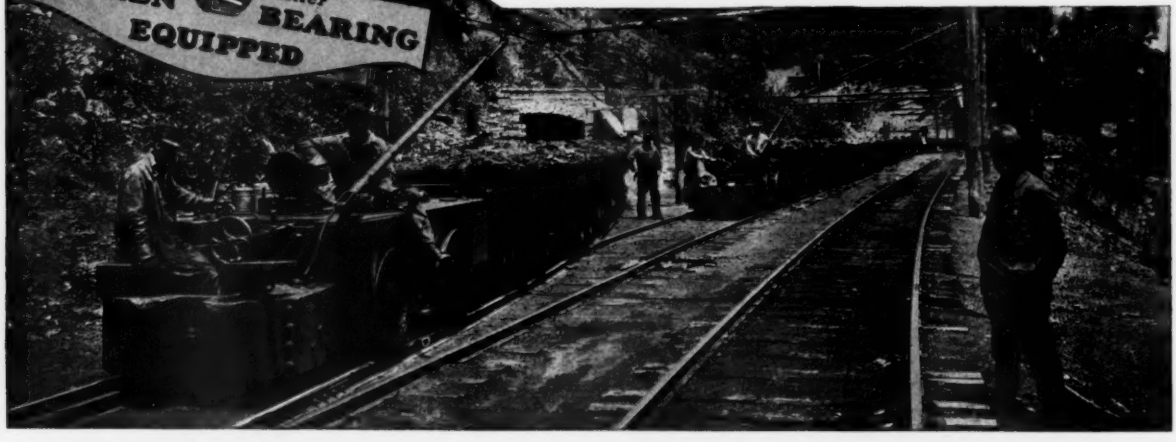
3 Coal tonnage hauled per train increased 20%.

4 Car lubrication costs reduced 86.9%.

5 Car maintenance costs reduced 86.5%.

A facsimile copy of the complete report will be mailed to any mine operator on request.

Does it pay to operate Timken Bearing Equipped mine cars? Can you doubt it in the light of the above survey, coupled with the experience of nearly 1,000 successful mine operators? The Timken Roller Bearing Company, Canton, Ohio.



TIMKEN *Tapered Roller* BEARINGS

The
MINING CONGRESS JOURNAL

**A Monthly Magazine—The Spokesman For The Mining Industry—
Published By The American Mining Congress**

VOLUME 17 SEPTEMBER, 1931 No. 9

EDITORIALS

Industry's Problem

IN OUR August issue we presented a viewpoint on Communistic Russia that has met with general endorsement, and aroused a considerable amount of interest. Fundamentally we are all opposed to the rough road the Russian has chosen for his so-called "liberation." Every right thinking American is justly horrified at the spectacle presented by Soviet Russia, and is deeply concerned that the blight of its doctrines shall not take root in the United States. Just how deeply the seeds of Communism have taken root in the discontented areas, particularly during the present unemployment difficulty can not yet be gauged, but the fact that the seed is being sown is certainly no secret.

We are prone to accept as gospel that Democracy and the capitalistic system are the acme of civilization. Admittedly they are. Our American standards are higher than most countries; the workers' opportunity is greater; under it, we have grown to a giant's stature. But there is a possibility that we are in danger of losing sight of our feet in the dizzy height of our heads. There is no disputing our strength or our growth, but there is genuine danger in our failing to grasp the magnitude of the responsibilities of our strength.

Industrial responsibility is as inevitable as the seasons. Leaders in industry have a great responsibility. Any country worthy of our eminence in world affairs, should be able to afford each of its citizens the opportunity to work, and a reasonable assurance of the permanency of that opportunity. Any country is but a reflection of its leaders. And in America today, its leaders dare not fail. A country is something more than mass production of materials. It is the sum-total of the lives of its citizens—human beings—who have a reasonable right to happiness. With eight million men looking for jobs; with eight million human beings clothed in misery and the unwilling objects of charity, the best in our leadership is challenged.

We have every confidence that the difficult situation will be met, but at what cost, or with what future result, remains a serious question. It is certain, however, that the answer is not a matter of politics or charity, but of clear thinking, intelligent action, and the acceptance of industrial responsibility by leaders in our great industrial enterprises.

Dole and Doldrums

IT IS to be hoped that President Hoover will remain firm in his, so far, adamant position against the Treasury raid, familiarly called the dole. Loud and long is the cry from certain publicity seeking politicians, to save the day by having the Government—the people—shoulder the responsibility of industry.

Recently Owen D. Young said something to the effect that there is some question as to who should be permitted to accept responsibility but that there is no question about the performance of that responsibility once it is accepted. In our country, capital—industry—accepted responsibility. It said, "we have a system. It will guarantee to us as a country, those things which humanity has always been seeking." So far it has lived up to its responsibility. It has given humanity the greatest civilization of all time. It has provided the worker with an economic independence that has been the pride and envy of the world. But today the system is on trial. It finds itself in the morass of a world depression. It has been struggling to get itself out. So far its struggles have only sunk it deeper. But industry will accept the responsibility it assumed. It will prove again its worth. To further complicate its problem by the political dole is unthinkable. Every district should make its wishes known to its members in our national Congress, and every suggestion looking to this unhappy solution should be promptly rejected.

Red——

RUSSIA as a menace from the production standpoint is somewhat overrated. Russia, with her 160,000,000 people—ignorant, miserable, unorganized humanity—will have a stiff battle to meet the rising tide of her own needs, and it is probable that it will be several years before she can be a serious competitor in our own home markets. But Russia can be, and is, a menace to our idea of "the pursuit of happiness." In the coal centers, in the mill towns, in the congested districts of our great cities, Russia finds fertile fields for the spread of her doctrine of destruction

of things—of our civilization as we know it—without offering any better (or for that matter any) plan for achieving things as they ought to be.

Only one man in thousands is capable of economic independence. The vast majority must rely upon the brains of others for jobs. Humanity, en mass, are followers, and will follow, on the whole, competent leadership. But lacking that leadership, it will follow along the path that seems to lead to that utopia—the millenium.

Our problem today is not to worry too greatly about competitive Russia but about the leadership that will guide our workers into sound paths that will lead, if not to utopia, at least to contentment.

Before the Civil War

IMMIGRATION has been a serious problem for a number of years. The new world "melting pot" almost boiled over, and the crowding developed many complex problems. We were obliged to say politely, but very firmly, that we must be the judge of how many, and what kind of guests we invited to our house. In our free and easy days, we welcomed any and all who wished to join us in our experiment in Democracy. But by and by, the house got too full; some of our visitors were not of the calibre that we had hoped to attract. We withdrew our wholesale invitation, and sent out cards of admission.

While that was our prerogative, it brought a storm of protest against it, and we were accused of insulting certain nationals, because of our obvious preference for certain other nationals. Nevertheless, we maintained our position, curtailed our invitations, and in the fiscal year ending July 1, immigration was curtailed to 100,000, which is the lowest mark since the Civil War. The figures in regard to immigration are interesting. In the years just before the World War, our annual immigration figure was more than a million persons. In the period between 1910 and 1930, our net immigration figures show some 8,000,000.

With prosperity the United States was for years the mecca of the European peasant. His number was curtailed or increased according to the financial opportunity offered him here. But with the World War, and the closing of our doors to all who wished to come, this situation has completely changed. We shall again have prosperity in this country, and many will be eager to benefit by it, but it is safe to say that our immigration laws will not be lowered. We shall always retain the right to select our own fellow-countrymen.

An Anti-Trust Conference

DEAN FRANK H. SOMMER, of New York University, is sponsoring a conference to consider our anti-trust laws. In his announcement he gives as his reasons for calling the conference at this time, as "The current business depression has sharply focused attention upon the existing governmental structure and economic organization and has subjected them to analysis. This has resulted in a wide-spread criticism of the present state of the law, particularly in its application to business."

The anti-trust laws are not a new subject. They have frequently been a subject for debate since their enactment. The problems presented are not new problems. Industry has been studying them for many years. Various and interesting are the proposals concerning surmounting the obstacles they present, particularly to the natural resource industries. There are many who believe that an amendment to these laws would permit, for instance, the coal industry to function with efficiency; the copper producers to get together to their own and the nation's benefit; the lumber producers to conserve their product and at the same time save themselves; the lead and zinc industry to meet the ever increasing inroads into its markets through by-product zinc and lead. In fact there is a general feeling among the natural resource industries that the anti-trust laws are at the bottom of all of their ills.

Whether the conference so suggested will clarify the views of industry; will coordinate their opinions; will bring about some concrete plan upon which all can unite in a plea to Congress, remains to be seen. It is a subject that the American Mining Congress has been identified with closely, and the purpose of the conference is along the lines it has consistently recommended. Those invited insure intelligent, keen analysis of the problem, and it is to be hoped that much good will accrue.

The Census of Mines

THE place of mines in our industrial family has often been a subject for these columns. We have believed implicitly in the mines as a great national asset, and as second only to agriculture as a source of revenue, employment and dividends. The Census report on the mining industry confirms our statements, and gives an imposing analysis. We have 10,135 companies, operating 11,602 mines and quarries; we employ 806,043 wage earners, at an annual pay roll of $1,083,640,059, and we spend for supplies and the like, $413,246,896. These figures, of course apply to the year 1929. The value of our product was $2,392,650,689, of which coal represents 56.5 percent; metals 26.2 percent.

In this survey mining takes second place to none. It is the backbone of our country, and its protection, stimulation, and encouragement is one of the greatest needs. Protective tariffs, just taxation, sound laws, proper labor relations, are only a few things that should have sympathetic cooperation. Mining is well worth protection as a national asset.

An Extra Session

WITH a sigh, the country accepts the fact of an extra session of Congress. There is the moratorium to be passed upon, and the war debts are coming due. Beside, there are a certain number of politicians who must express themselves on the vexing problems of state, and it is probably better to get this over with before the regular session, which is already assured of capacity work—no unemployment question in the personnel of the House and Senate! Mr. Hoover is to be trusted not to call the session too early, and to give Congress a full slate. So perhaps we will not have so much to sigh about after all, even if we may be certain to be deluged with all sorts of fantastic proposals for the solving of our economic chaos.

Coal and The Spotlight

THE coal industry has been occupying a more conspicuous place in the spot-light that has been turned on industry problems. The full glare of the politician's spotlight was turned on coal, first by President Hoover's proposed conference with operators and union officials, to adjust employment and wage scales, and second by the bravery (if it can be called that) of certain operators who dared the storm of disapproval by openly advocating Government control of the mines. Coal also enjoyed (?) a little gleam of spotlight, in the hearings on freight rates, before the Interstate Commerce Commission. All in all, the industry has been done pretty well by from a publicity sense during the past month.

But what does it all mean? Absolutely nothing. The President will call a conference. Most operators will come because it is called by the President; come half-heartedly, and certainly with no hope that politics can do more for coal now than it has in the past. The Administration itself has evinced no great joy at the prospect of such a conference. Mr. Hoover from past experience knows that such a conference is of dubious political value, and that Government control is not the way to solve the coal industry's problems.

But with the publicity attending, much discussion is being evoked. From the West Virginia, Eastern Ohio, and Western Pennsylvania districts, much smoke is arising, and possibly some of the smouldering fire may furnish a ray of helpful suggestion. So far the proposals from this field have been, first, out and out Government ownership and control of all coal; second, the control of coal through a national commission, similar to the Interstate Commerce Commission, and third, by the much discussed plan of consolidations. A leading economist frankly states that all that is needed is that the Interstate Commerce Commission be permitted to extend its present authority, by determining whether roads shall be built into new properties.

At this writing there is much smoke, but little fire. The glare of the spotlight makes coal seem a new problem. But it is the same old fellow, sunk deep into the mire of its own apathy. And nothing is going to pull it out, dig it out, or smoke it out, but its own intelligence, and leadership within the various groups.

Nationalization

WITH the whole political atmosphere impregnated with the thought that legislation must come to the rescue if we are to solve our unemployment and other problems growing out of world-wide difficulties, it is to be expected that many proposals will be advanced in the coming session of Congress, along the lines advocated by Senator Brookhart for nationalization of the coal industry. The Senator has given wide notice of his intention to re-present such a bill in the Senate where it may repose gracefully beside some 40 similar proposals.

There seems to be very little sound ground to walk upon when we talk nationalization of industry. There is very little upon which we may pin our faith when it comes to the government owning and operating industry, and certainly no assurance can be safely given that we would be better off if such a plan were in effect. There is, however, much evidence to prove that political control of natural resources mean the beginning of the death struggle of any country.

Therefore the Senator's announcement that he will push his proposal for nationalization of the coal mines, need not be taken too seriously. His desire to see political control of the coal business, or the oil, lumber, shoe, candy or suit and cloak business, may be shared by a few. But these are far outnumbered by men in Congress who have vision, and who will not willingly put our national heads into such a noose. Besides, Congress is controlled primarily by those it seeks to represent, and the interest of constituents will in the end obtain. Fortunately these constituents are largely interested in American industry.

We are a long way from nationalization of basic industries, but such proposals and agitation is cause enough for concern and for collective, coordinated, intelligent, cooperative action.

Among Those Things

AMONG those things that are every day occurrences, we find the transportation lanes of our great cities—subways, street cars, ferries, trains—flooded with handbills urging demonstration against "wage cuts," "starvation," "murder in the coal fields," "bosses," and "unemployment." All of these urged "demonstrations" are sponsored by the National Miners Union, full legitimate child of Soviet Russia.

Many and sundry are the panaceas offered for solving our world economic ills. Practically any and all suggestions, however, meet with immediate attack from the opposite side. Shall industry assume responsibility? No! Let the state do it. Shall the state government assume responsibility? Most assuredly NOT; let the Federal Government do it. Shall the Federal Government assume responsibility? The deafening roar of the protesting Noers, rises high. Shall the rich dig deep into their pockets for charity that the unemployed do not want?

The situation must be met. If not by one means, then by another, 8,000,000 people are not going to idly and complacently accept charity; are not going to supinely submit to a chorus of "Noes." Unemployment and economic reconstruction while not to be confused, are equal factors in the problem. Economic reconstruction is vital to our continued success as a nation.

President Hoover has appointed a national committee to cooperate with industry in at least solving this winter's problem of unemployment, and it is to be hoped that their combined leadership coupled with industry's vision, will see us well on the road to recovery before another summer.

Maintaining Wages

SHOULD wages be cut? There is a question for the wiseacres to conjure with! Labor is insisting upon the maintenance of wages; industry is bent on cutting wages, and is actually doing so in one way or another. The percentage of actual cuts is perhaps not large, but many are shortening the labor week, and thousands of workers are being laid off.

What is the right policy? One economist points out with common-sense logic that wages MUST come down to the level of commodity prices; another economist, equally brilliant, and with equal logic insists that wages MUST be maintained in order that the volume of purchases may be continued, and that production may be kept up.

There are certainly well informed and clear visioned men who strongly believe that employment would be more general if wages were reduced, and who believe that maintaining wages does not offer any opportunity for increased employment. When the United States Steel Corporation with admittedly sufficient surplus to guarantee dividends for three years, takes the position that it must cut wages, or curtail employment, it is time to look at this subject with more than casual view.

A small number of leaders with what to us seems sound logic, are maintaining wages, and reducing the hours of employment. Thus they meet both schools of thought—they employ more men, and maintain wages.

Planning . . . What?

THE United States Chamber of Commerce recently sent out a questionnaire, seeking views as to the feasibility of a "plan" to assist in a reconstruction policy. From all of the talk about economic planning, and the publicity given those advocating such planning, we are led to believe that no such thing exists in the United States; that we are a nation of drifters, and that no attention has been given to the question of adjusting consumption and production. On the contrary, it is amazing just what we are doing and have been doing along this line. Supply and demand is a familiar problem and one that has been faced with growing interest by industrial leaders. Not alone has industry studied the problem; the government has shown more than ordinary interest in it. Recently the Director of the Bureau of Foreign and Domestic Commerce issued a statement of the extent to which such "economic planning" (if not by this euphonious title) is practiced here, through cooperative effort of the government and industry. He points out that 446 national associations of manufacturers and distributors are now engaged in planning ways of meeting some 60 major problems. Fourteen of these methods—such as simplification of methods, and trade practices and standardization of products—are being and have been under investigation by 100 different groups. The problem of adjusting production to consumption is being studied by 106 groups; 87 groups are making sales surveys; 86 groups are investigating methods of developing new uses for materials and products already on the market; 146 groups are engaged in technical research; 286 groups have established regular contacts with the various departments of the Federal Government for the purpose of exchanging information.

All of these things have been inaugurated and conducted as regular outgrowths. They do not represent any spasmodic effort. They have not been dramatized. The thought that any group of politicians can do more, or can as effectively coordinate these activities is hardly worthy of consideration. Our "economic planning" seems to have gone considerably farther than is generally realized.

The Rising Cost of Government

THE Index, published by the New York Trust Company, recently presented an article which pointed out that "Rising costs of government, inflicting heavy tax burdens, are causing grave concern in most countries, and in the opinion of many competent observers, are proving a serious obstacle to the restoration of our economic prosperity." They also point out that in the face of diminishing receipts Congress, at its last session appropriated the enormous sum of $10,249,819,315.60—the largest sum ever appropriated at a single session in peace time in this or any other country. State, county and municiple governments have followed the lead of the national Congress and have steadily increased their expenditures, and raised their taxes. According to figures presented by the *Index*, of the $12,609,000,000 gross total spent in 1928, the Federal Government accounted for 31.5 percent, state governments for 14.5 percent, and local governments for 54 percent.

These are facts. But what lies back of them? The legislatures, state and national, do not meet and, simply because of a desire to spend money, appropriate millions that must come out of the pockets of their constituents. There is a definite, well organized demand for the moneys so appropriated. Education lies not with the legislatures, but with the taxpayer. Sooner or later he must come face to face with the fact that the Government cannot meddle in all of the things he advocates, without his paying the bill. Unfortunately those who pay large sums for taxation are in the comparative minority, and those who advocate large Government expenditures are in the majority. In self defense, property owners must join hands to stem this rising tide of expense.

The Conscience of the Muckraker

LINCOLN STEFFENS regarded by many and frequently called the greatest of reporters has published an autobiography. A very friendly reviewer, after reading these two thick volumes says, "It's a great life Lincoln Steffens has lived and a great life he has written; a life devoted to incessant search for the truth, to continual revision of his own views of what constitutes the truth."

Lincoln Steffens has written many books. Some of these books portray situations which called for his "continual revision of his own views." These books have had a distinct influence upon public thought. As the original muck-raker he did more to break down the confidence of the public in human honesty and integrity than perhaps any other writer because of the fact that he led the way for many other writers.

In his portrayal of crime and criminals the public mind was greatly influenced to believe that there is no integrity nor patriotism left among the common people.

It is to be hoped that Mr. Lincoln Steffens will live long enough to realize that the fundamental principles upon which our nation has been founded are in the main correct; that not all new things are good and not all old things are bad; that the criminal is the exception and not the rule, and that the great majority of our people are law-abiding, patriotic, useful citizens and that our Government in spite of its criminals is a government under which all well-intentioned people may live happy and useful lives.

Nothing is more detrimental to the public welfare than a belief that all people outside those of our immediate acquaintance are scoundrels and thieves. No one sentiment is more effective in breaking down confidence in courts, legislatures and the Government.

Nothing is more important to our welfare than a stable government which at all times protects "our lives, our liberty and our pursuit of happiness."

Harris & Ewing

Wheels of Government

A Review of Activities in Summer-Time Washington

By E. H. Pullman*

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FOR many years Washington stood an unique example of a world within a world . . . an exclusive empire bounded on the north and south, the east and west, by hide-bound bureaucracy. Washington, the capital of a great country, was the one place on the map that should be shunned by business, by the traveling public, and by all and sundry except those unfortunates compelled to deal with it. Its reputation as an oversmall town, with a climate comparable only to the equator, spread far and wide, and Washington was promptly ignored except in those infrequent periods when the national legislature was in session, and brilliant men blatantly urged the removal of the Capital to points west; points east; or any other point of the compass, leading away from the valley of the Potomac.

Sleepy little Washington awoke one morning to find itself in the glare of the spotlight. A world war was in progress, and Washington was the hub of the wheel. All of those who had so completely shunned Washington packed up their bags and made a straight-away for it. They may have only been seeking jobs; they may have had utopian urges to help in the national emergency; but in the end, they stayed and they helped to form commissions, committees and whatnot. Big business executives came, assumed command and stayed. Washington has never been the same since. Its growth has been phenomenal. From a relatively small population, in a 15-year period it has grown to a great metropolis. Visitors come by the hundreds of thousands . . . and Washington is conceded one of the loveliest cities in the world, the mecca for all.

With the autocratic powers given Government during the war, and the birth of hundreds of commissions, bureaus, committees, and such, Government has

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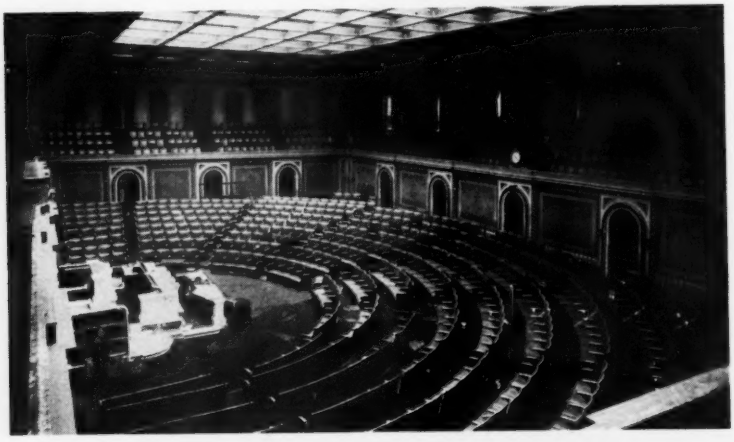

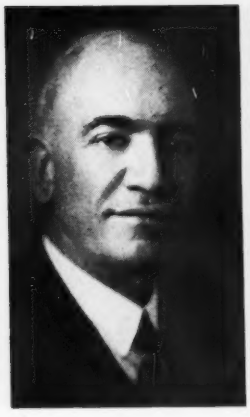

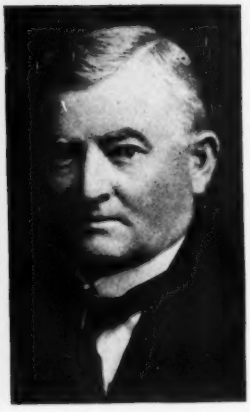

John Q. Tilson ***Bertrand H. Snell*** ***John N. Garner***

The three leading contenders for the Speakership of the House

Harris & Ewing photos

grown apace with our industrial life. Most of the adjuncts of war were made more or less permanent peace-time fixtures. Industry found itself compelled to petition Washington for many of its activities. And whether we like it or not, the Government now has its finger in the pie of all industry, big and small.

Washington today, in and out of season, is one of the busiest of cities. No longer is it dependent upon a session of Congress; in fact, sessions of Congress are merely incidental to the functioning of our great Government machine. Congress convenes, headlines blare, trumpets sound. Congress recesses, and we still have the headlines, if not the trumpets. The business of Government goes on and on and on.

The present season is an excellent example, and certainly no exception. Almost every event happening in official Washington has taken on the importance of national interest. This may be because of the depression that has confronted us, with its attendant unemployment situation, and the international ramifications that have grown out of it. But be that as it may, and from whatever cause, Washington during the present recess of Congress has been a veritable hive of activity, news and epoch-making history.

Debt Suspension

PERHAPS the most important, and most far-reaching thing of consequence developed during the summer has been President Hoover's Moratorium. Official Washington fairly hummed with the pros and cons of this action by the Washington Powers. Correspondents of the great newspapers with headquarters in the Capital, and reflecting the views of the great rank and file of America, have largely been loud in their praise of Mr. Hoover and concede the far flung result. Almost unanimous approval has been given by members of Congress to the President's proposal, in a poll of the statesmen at their homes, and formal endorsement of the debt delay program is expected to be given by Congress at its next session.

In averting a crisis in the financial and economic affairs of Germany, the consummation of this financial moratorium has done much to stabilize the governments of Europe and is looked upon as a step in the direction of overcoming the economic depression which has gripped the world for the past two years. Releasing as it does money and credit for the purchase of goods and the expansion of trade in Germany and other countries, the moratorium has already eased a tense financial, economic, business and government situation and promises to lead to trade recovery in many quarters. Already Germany is negotiating for the purchase of American products, including copper.

Congress is not slated to begin its sessions again until December 7, but action in approval of the debt moratorium will be necessary before December 15, when the semi-annual interest payments are due on the war debts of foreign countries to the United States. President Hoover has resisted appeals of various members of Congress to call an extra session which have been repeatedly made to him, to consider legislation to relieve the unemployment situation, and more lately to consider relief for farm lands affected by grasshopper pests in the West and to approve the debt release program. Some Congressmen have opposed the moratorium on the ground that it will lead to an ultimate cancellation of the payment of debts by foreign countries to the United States, but this is denied by responsible Government officials in charge of the negotiations looking to the debt suspension.

Possibility of Extra Session

BECAUSE of a possible delay in the organization of the House of Representatives at the coming session of Congress, due to the close division between the Republican and Democratic members, and the uncertainty as to which party will elect the House Speaker, to succeed the late Speaker Longworth, of Ohio, suggestion has been made that Congress be called in session in November in order to perfect the House organization and enable it and the Senate to pass on the debt suspension agreement before December. While no official word has come from the President, who alone has the power to call Congress into session in advance of its regular meeting time, it is becoming generally understood that a session of Congress

will be called in advance of the December session, probably sometime in November, in order that these plans may be carried out.

Organization of Our Congressional Houses

SPECULATION is rife in Congressional circles as to the organization of the House and Senate at the next session. Such an organization is required at the beginning of a new Congress every two years, and includes the selection by the House of its presiding officer, the Speaker, and by the Senate of a president pro tem to act in the absence of the Vice President, who presides over that body, as well as the selection of other administrative officials of the two bodies and the personnel of its committees. The Republicans enjoy but an advantage of one member over their Democratic rivals in both the House and Senate, but the Republican ranks in both bodies include what are styled "Progressives" who do not always line up with their leaders, while the Democrats are generally together. Hence a deflection of one or more of these "Progressives" would swing the organization of the House and Senate to the Democrats, and the patronage going with it, including choice appointments in the clerical forces at the Capitol. Such a thing has happened before in the Senate, when the "Progressives" or "Insurgents," as they are otherwise called, refused to vote for Senator Cummins, Republican, of Iowa, as Chairman of the Senate Interstate Commerce Committee, and this place was filled during the two years of that Congress in a Republican controlled Senate by Senator Ellison D. Smith, Democrat, of South Carolina. Normally, however, the members of neither political party desire this dual control, and the chances are that the Republicans will be in control in both Senate and House organizations when Congress settles down to its long session next winter. However, Senator Moses, of New Hampshire, the president protem of the Senate, has threatened to vote for Democratic committee chairmen should an attempt be made by "Progressives" to deprive him of reelection to his position. In the House there is rivalry between two Republican leaders for the Speakership, Representative John Q. Tilson, of Connecticut, and Bertrand H. Snell, of New York. The East is logically in line for the Speakership as the West, through Speaker Longworth, of Ohio, held the position for six years, and the policy of the House is generally to alternate between the different sections of the country in choosing its presiding officer. By reason of his key position as Republican leader of the House, Mr. Tilson is said to have the first claim on the Speakership, while the friends of Mr. Snell, who is Chairman of the Rules Committee, equally press his claims for the honor. The Democratic candidate for the post is Representative John N. Garner, of Texas.

W. N. Doak
Secretary of Labor

Robert P. Lamont
Secretary of Commerce

To Secretaries Doak and Lamont President Hoover delegated the task of sounding out the bituminous coal industry as to its views on the value of a Government called conference

Harris & Ewing photos

An International Conference on Silver?

NEXT to the debt suspension program, no issue has raised more discussion or created more interest in national and international affairs as has the silver problem, linked up as it is with economic conditions in India and China, the principal silver using countries of the world where the precious metal is hoarded, and trade relations of those countries with the United States and other nations. The administration has given serious consideration to the silver problem and has received many suggestions on the subject, but to date has reached no conclusions. Before it adjourned last March, the Senate passed a resolution suggesting that the President call an international silver conference to devise means of stabilizing the price of silver, which for a long time has been below 30 cents an ounce. The matter was taken up with the foreign countries concerned, through diplomatic and commercial channels, but the President and the State Department recently announced that some of the nations whose participation in such a conference is necessary, do not consider this a proper time to call such a conference and would in fact oppose the holding of such a gathering. The request of the Senate for such a conference was based on investigations and recommendations of its Foreign Relations Committee conducted by Senator Pittman, of Nevada, who has also spent considerable time in the Congressional recess in a further study of the situation in the Orient and who still feels that such a conference should be held. Senator Oddie, of Nevada, has also been abroad this summer, during which he has studied the question. Among the suggestions for relief of the silver situation submitted to the President was one by a group headed by former Senator Cannon, of Utah, who proposed that the United States loan silver dollars to India and China, as had been done in the case of England in 1918. Another suggestion came from Senator Smoot, of Utah, Chairman of the Senate Finance Committee and a group of Utah silver producers embraced in the American Silver Producers Association, but its nature was never made public. The International Chamber of Commerce has also considered the subject and is slated to give it further study in the fall. Indications point to the fact that the silver question will be a live topic for discussion at the coming session of Congress.

Bituminous Coal Conference

THE coal industry is another subject for which a conference has been proposed, and its outcome is still undetermined. Some months ago John L. Lewis, president of the United Mine Workers of America, appealed to the

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THE INTERSTATE COMMERCE COMMISSION

Seated, left to right: J. B. Eastman, B. H. Meyer, Ezra Brainerd, C. B. Aitchison, E. I. Lewis. Back row: H. M. Tate, P. J. Farrell, Frank McManamy, C. R. Porter, W. E. Lee, C. D. Mahaffie

President to himself call a national conference in Washington of operators and miners to consider means of stabilizing wages and other conditions in the bituminous industry, based on unemployment and distress among the miners and their families in various coal fields, and the failure of the industry to stabilize itself. Having in mind no doubt the failure of Secretary of Labor Davis, with whom he served in the Cabinet at the time as Secretary of Commerce, to conduct a similar conference in 1927, by refusal of the operators to attend, President Hoover referred the matter to the heads of the two Departments having jurisdiction of the matter, Secretary of Labor Doak and Secretary of Commerce Lamont to sound out the industry as to whether it would participate. In July these Cabinet secretaries each held separate conferences with small groups of miners and operators. A majority of the operators attending this parley were said to have expressed the opinion that a general conference of representatives of the industry would not be worth while, while the miners countered with the declaration that this small conference of operators was not representative of the industry and that large groups of operators would attend a conference called by the President. Subsequently the Commerce and Labor Secretaries dispatched letters to more than 150 operators in all of the coal fields, asking if they would attend such a conference and requesting their opinion as to whether the objects sought by Mr. Lewis could be attained as a result of such a national gathering of the representatives of the bituminous industry. Here the matter rests in abeyance for a while at least as no further official announcements have been forthcoming from the administration leaders, other than informal statements to the effect that some of the operators have replied. It is inferred from these replies that a majority of the operators who have expressed themselves on the subject are not favorable to such a conference as they cannot see how it can develop any constructive measures.

Sentiment is said to be crystalizing among groups of large operators in the important Pittsburgh district for Government regulation of the industry. J. D. A. Morrow, president of the Pittsburgh Coal Co., and former secretary of the National Coal Association, is said to be the author of such a plan under which the Government would hold coal lands in reserve and permit operation only of those mines capable of meeting the fuel requirements of the country, which it is claimed would prevent excess production and would enable the operating companies to do business at a profit with proper wages and working conditions for the miners. Samuel Pursglove, president of the Pittsburgh Terminal Coal Corporation, another large producer, is also reported to be in favor of Government control of the industry, and J. H. Jenkins, of Fairmont, president of the Hutchinson Coal Co., is quoted as saying the plan is desirable. Philip Murray, vice president of the miners' union, says he favors a system of Federal control which would curtail production, stabilize prices, guarantee continuous operation of mines, higher wages and better working conditions for the men. Consideration of the plan was to be given by operators in the northern West Virginia field.

It is recalled that a plan of Government control of the coal industry was proposed in Congress a few years ago and was the subject of extended hearings before the Senate Committee on Interstate Commerce. The proposal emanated from the miners' union and was given a legislative status by introduction of a Government coal control bill by Senator James E. Watson, of Indiana, then Chairman of the Committee. During these hearings, which extended over several months, and which were marked by acrimonious tilts between the operators and the union representatives and their attorneys, the coal men opposed Government interference with the industry and asked that it be left alone. In the end no action was taken on the measure by the committee.

Still another plan for regulating the industry has come from a group of bankers, credit men and chamber of commerce officials, covering suggestions for stabilizing the bituminous industry in West Virginia, Pennsylvania and Ohio. This scheme calls for the appointment by the governors of these states of the presidents of their state universities as a board with power to regulate the industry and create a new competitive field consisting of western Pennsylvania, eastern Ohio and the Morgantown, Fairmont and Kanawha districts in West Virginia in place of the old central competitive field of Ohio, Indiana, Pennsylvania and Illinois. Under this board the mines would be privately owned but the operators would join in a unit under state government guidance, the board to establish a basis of cooperation between the operators and miners, regulate production, establish basic market prices fixed on payroll and other production costs at a rate to give the operators a fair price and the miners a living wage. The sponsors of this plan claim that 100 operators could manage properties on a fair basis in this field with a fixed per-

THE OLD AND NEW WASHINGTON

Harris & Ewing

View along Pennsylvania Ave. from Treasury Building, to the Capitol. On the left is shown this historic thoroughfare as it was until a few months ago. On the right are models showing the new development as planned. The building on the extreme lower right, the future home of the Department of Commerce (U. S. Bureau of Mines), is nearly ready for occupancy.

sonnel. Engineers would make a survey of the industry and ascertain the potential production and consumption of the field and rate every property from a production standpoint, production to be balanced with consumption by state and district operations for periods of a day, month and year.

While Government officials are loath to discuss the plans while the President has the matter of a conference under advisement with his Cabinet members, it is said to be the informal opinion of those posted on the subject that any plan of restricted production or fixation of price, even under Government guidance, would have to receive the sanction of Congress, as it is not now permissible under the anti-trust law. It is also pointed out that if such a plan was applied to coal it would also have to be put into effect on copper, oil and the other natural resource industries which have been suffering from over production and lack of markets.

Freight Rate Increase

THE application of eastern, western and southern railroads for a 15 percent increase in freight rates has brought an avalanche of protests from metals, coal and other interests, although a few scattered industrial concerns have expressed the view that a rate advance is necessary to bolster the credit of the railroads. An early decision of the case is in prospect, as the Commission expected to conclude the taking of testimony in the matter early in September, the nonferrous metal interests having been assigned time to present their case at the final hearing beginning August 31 at Chicago. During the past two years the nonferrous metal industry has gone through a rate case, the general investigation by the commission of the entire freight rate structure on copper, lead and zinc, and the case has not yet been decided, the final hearing being scheduled for Chicago on October 14. The purpose of the metal interests is to present to the commission the evidence as to the condition of their industry, as developed in the hearings in the general rate structure inquiry, brought down to date, which they claim is of such character as not to warrant an increase in their rates.

Several vulnerable spots have cropped out in the general freight rate advance plea of the railroads, according to the testimony in the case. These were strikingly pointed out by Commissioner Eastman, sitting at one of the hearings when he pointed out that in numerous cases of recent record the railroads had reduced rates beyond those established by the commission in order to meet competition. These cases dealt with rates on pig iron, iron and steel, and petroleum in various parts of the country and the Commissioner prodded the railroads for asking for a general advance of 15 percent in rates on products on which the railroads had made greater reductions than those authorized by the railroads, with permission of the commission on application of the roads. He also reminded the railroads that the commission had tried for two years to get their opinion as to whether the metal rates should be changed, but without success, the railroads offering no testimony indicating whether they favored a change in these rates. He also questioned railroad witnesses as to whether the anthracite and bituminous coal industries could stand a 15 percent advance. The replies of the railroads were that the railroads had only recently come to the conclusion that a rate increase was necessary, and that if the industries could not stand these new rates, they could be adjusted. This brought from Commissioner Eastman the following comment: "Why go through the process of increasing a rate and then reducing it?"

It has also developed that while the railroads are a unit in their plea for the rate advance, some of the railroads who have been earning more than the 5½ percent return (*Continued on page* 439)

WAR POLICIES IN TAXATION

IN the light of past experience any plan of war revenue legislation should include a war profits tax designed to bring into the Treasury, so far as practicable, the entire amount of profits due to the war.

The funds for financing the participation of our country in the great war were obtained from two sources. The first was taxation and the second was borrowing on long-term bonds, notes and short-term certificates of indebtedness, the latter usually issued in anticipation of the proceeds of bond issues or tax receipts. A third possible source sometimes employed by governments in national emergency, but not used by our Government in the late war, is the direct issue of government obligations in payment for goods and services.

A fourth method of finance which has never been used by our Government is the taking of private property for public use without compensation. I take it that the object of the Fifth Amendment to the Constitution requiring compensation for any such taking from a citizen is precisely that indicated by another phrase of the resolution: "to equalize the burdens of the public requirement by causing that burden to be apportioned among the citizens generally through taxation instead of permitting the burden to rest on the citizen owning the property taken, upon whom it happens to fall in the first instance."

The method of finance which I have been asked to talk about is taxation. The position of the Treasury as to taxation in the great war was broadly that as large an amount should be raised currently by taxation as could be so raised without disrupting the business or economic machinery of the country. For the balance of the needed funds the Treasury advocated reliance upon loans from citizens. These loans were to be voluntary, but on the basis of the fullest patriotic support of the Government in its supreme effort; were to be drawn from past or anticipated future savings of the people, and to be ultimately discharged from post-war taxation and such other funds as the Government might have available.

On the question of the proportion of the war financial requirements to be raised by taxation, the attitude of the Treasury was, I think, based mainly on its estimate of the tax burdens which the business structure could bear without disruption. It was desired to preserve that structure and keep it functioning at maximum capacity for the maintenance of the military effort and meeting the civilian needs, while at the same time absorbing into the Treasury as much as possible from taxation. The Revenue Act of 1917 was designed to bring internal revenue collections for the Government's fiscal year 1918 up to $3,400,000,000, as compared with $809,000,000 actually collected in 1917. The actual yield for the 1918 year was $3,699,000,000. The Revenue Act of 1918, delayed of enactment until 1919 largely because of the ending of the war, was designed to yield about $6,000,000,000 in the fiscal year 1919. In the discussion of that measure before Congress the Treasury urged that current taxation could and should be made to yield about one-third of total estimated current expenditures for the year. So far as I know there was no magic about that percentage. It represented an estimate of what could be secured through taxation without disruption of the business machine. Statistics show that the percentages of tax receipts to the Government's total expenditures (exclusive of public debt retirements) during the war years were as follows:

Fiscal year	Percent
1917	52.4
1918	26.5
1919	24.3

IN formulating the plans of taxation, miscellaneous taxes such as the transportation tax, manufacturers' excise tax, stamp taxes, and the like, were employed so far as they were thought to be fruitful. In another national emergency the general business situation existing at the time would again have to be thoroughly canvassed to ascertain the full possibilities of employing special taxes. It might well prove that relatively more could be accomplished in the development of excise or other special taxes than was accomplished in the great war.

In the great war the chief reliance was placed upon the income tax, including, of course, the corporation income tax and the war and excess profits taxes. By the Revenue Act of 1917 the rates for individual taxes were increased as follows: the normal rate from 2 percent to two rates of 2 and 4 percent, and surtax rates beginning with net incomes of $20,000 and graduated upward to 13 percent to rates beginning with net incomes of $5,000 and graduated upward to 63 percent.

By the Revenue Act of 1918 the individual rates were raised as follows:

* Assistant Secretary of the Treasury before the War Policies Commission, Washington, D. C.
Photographs from the U. S. Signal Corps.

***By* Hon. Arthur A. Ballantine**

Normal rates for 1918 incomes to 6 and 12 percent and maximum surtax rates to 65 percent.

As to trades and businesses and corporations the Revenue Act of 1917 imposed the war excess profits tax. This tax was designed to apply to all business whether carried on by individuals, partnerships, or corporations. The tax was to be computed on the entire net business income in excess of a specifically defined return on invested capital plus a specific credit. The rate of return on capital allowed as a deduction before computing the tax, was the average rate of return of the trade or business upon capital in the pre-war period, 1911-1913, inclusive, but was not to exceed 9 percent or be less than 7 percent. The rates of tax were graduated according to the amount by which the net income in excess of the designated normal return on invested capital exceeded certain percentages of the taxpayer's invested capital, and ran from a minimum rate of 20 percent to a maximum rate of 60 percent. In the case of trades or businesses having no invested capital, or not more than a nominal capital, the war excess profits tax was levied at a flat rate of 8 percent. The net income of the trade or business less the war excess profits tax was subjected to income taxes which, in the case of a corporation, consisted of a normal tax of 2 percent and a war income tax of 4 percent.

By the Revenue Act of 1918 there was added the war profits tax to be paid to the extent that it exceeded the excess profits tax, which method of taxation was retained by that act in somewhat revised form. The war-profits tax for 1918 was 80 percent of the excess of the net income over the war profits credit. This credit was $3,000 plus an amount equal to the average net income of the corporation for the pre-war period plus or minus 10 percent of the difference between the average invested capital for the pre-war period and invested capital for the taxable year, but was not to be less than $3,000 plus 10 percent on invested capital for the taxable year. The credit against income for computing the excess profits tax under the 1918 act was $3,000 plus 8 percent of the invested capital for the taxable year and the maximum rate was 65 percent for 1918 and 40 percent for 1919 and 1920. Under the 1918 act the net income remaining after the deduction of the war profits and excess profits taxes was subjected to a normal corporation tax of 12 percent for 1918 and 10 percent for 1919 and 1920. The war and excess profits tax imposed by the Revenue Act of 1918 applied to corporations only.

AFTER the Revenue Act of 1917 was enacted great doubt was expressed by business executives and accountants as to whether the excess profits tax could be administered, and whether amounts of tax at such high rates could be collected without disrupting business and financial institutions. The act was administered, notwithstanding gaps and uncertainties in its provisions. The tax imposed by the 1918 act at higher rates but under somewhat improved provisions, was also shown to be capable of administration. The high rates, uncertainty as to the application and meaning of the act in many connections, and defects in the records and accounting systems of taxpayers resulted in great delay in many instances in final determinations, in a great number of additional assessments, and in numerous abatements and refunds. Broadly speaking, however, these acts were administered so as to furnish the Treasury with the needed and expected funds. They brought into the Treasury through 1921 about $6,900,000,000. A comparison of the tabulated net income of all corporations reporting net income for the three years before the war (the calendar years 1914 to 1916, inclusive) with the net incomes of such corporations for the war years (1917 to 1919, inclusive) shows that the average net income of corporations reporting net income was for the pre-war years about $6,000,000,000 before taxes and about $5,900,000,000 after taxes and that the average income of such corporations for the war years was $9,500,000,000 before taxes and about $7,000,000,000 after taxes. Thus, the average net income of corporations reporting net income increased $3,500,000,000 for the war years, while the average net income of such corporations after taxes increased about $1,100,000,000. According to this calcualtion, based on reported incomes and taxes, the taxes during the war, principally of course war and excess profits taxes, absorbed about 70 percent of the increase of the average profits of the war years over the average profits for the years immediately before the war.

Future War Tax Legislation

WHAT future war tax legislation would include in the way of miscellaneous taxes and what rates of income tax would be suitable would of necessity depend on conditions at the time of the emergency. It is clear, however, as I said at the outset, that any war revenue plan of which we could now conceive suitable for a great national war emer-

gency should include the most effective war profits tax which it is possible to devise. The ideal war income tax would bring into the Treasury the entire amount of profits due to the war. There is no reason to doubt that the business men of the country would support a war profits tax properly framed to turn over to the Government all actual war profits. Business men share the general opinion that the place for war profits is in the war chest of the Government. The problem here is not as to the principle to be followed, for that is clear, but as to the technical difficulties of so formulating a war profits tax that it will measurably accomplish its purpose without preventing the necessary operation of the economic machine. There is no doubt that careful work in advance of the emergency upon such a measure will make possible a much closer approach to the attainment of the ideal war profits tax than would be possible if formulation is left to the time of the emergency.

It has been recognized that war profits, at least in some lines, are inevitable. If it be assumed that the price structure existing at the development of the emergency can be pegged or frozen, as has been so ably urged, it is recognized that to meet the increased war demands for goods higher cost producers must be drawn into production and such higher cost producers must receive higher prices than are needed for low cost producers. Such higher prices will increase the profits of the low cost producers. Mere increase in the volume of business at the old prices would also greatly increase profits in many cases. War profits will exist as the subject of taxation and the limit of such taxation is of course the amount of the profits.

IN approaching the subject of war taxation it must be recognized that any plan which would in fact operate to put necessary enterprises out of business would be disastrous to the prosecution of the war. If private industry is to be left to function during the war, the necessary production of munitions and goods and the financing of the war would be frustrated by attempting to collect as a tax amounts which the taxpayer could not draw out of the business while continuing to operate the business.

The first technical question to be faced is the problem of determining what the war profit is. To begin with there must be a determination of the profit. In the case of any business which is at all complicated the determination of the profit for a particular year can rarely be exact but must rest in part upon assumptions and estimates. Almost never does the entire profit take the form of an actual excess of cash or securities at the end of the year. Generally speaking, part of the profit is in the form of inventories and in the form of improvements or additions to factories. Where the rate of tax is moderate, errors in determination do not have vital consequences and average out over the years. If, however, the entire profit is to be taken out of the business errors in computation might be disastrous. Without elaborating on this difficulty, it may be stated that to allow some margin for error, any workable tax would presumably have to be computed on some percentage less than 100 percent—say, 80 percent, or perhaps at the outside, 90 percent. Eighty percent was the rate urged by the Treasury and adopted as the maximum in 1918 and was the rate finally used in the British excess profits tax. Leaving some relatively small margin of profit also serves the purpose of furnishing a guaranty to the Government that the taxpayer will see to the administration of the business with efficiency and economy. This protects both the revenue and the output.

Once the profit is determined there remains the question of how far the profit is due to the war. The determination has to be made in a broad way. There can be specific determination of the source of the profit in each individual case. In 1918 the Treasury earnestly advocated that the war profits should be determined by comparison of the war income with pre-war income—the entire excess over pre-war income to be regarded as war profits and taxed at 80 percent, which was the primary basis under the British system. Congress, however, adhered mainly to the use of invested capital as the basis of measuring excess income to be subjected to the tax. Under the 1918 act the income subject to the 80 percent war profits tax was in actual practice in most cases the excess of the income after deducting a 10 percent return on invested capital. As in the ordinary case the tax was based on the excess of the net income over what was regarded as a normal business return upon capital, instead of upon the net income over pre-war income, the tax was not a true war profits tax but was an excess profits tax.

APART from theoretical objections to an excess profits tax, the use of invested capital as the basis for measuring the excess of income resulted in very great practical difficulties. The determination of invested capital was all important in the actual fixing of the tax but such determination was in many cases very difficult and in not a few cases impossible. Where a corporation had been formed by turning in the property for stock the determination of invested capital depended upon the valuation of the property at the time turned in. Retroactive valuations are difficult and were the subject of many controversies. The amount of invested capital was in many cases affected by the time of organization of the corporation. Where it happened that a corporation had been reorganized or formed in a year shortly before our entry into the war, the valuation of its assets would be on a much higher basis than if there had been no such reorganization. The determination of invested capital was also affected by accident or intercorporate relationships. Problems as to the fixing of invested capital for consolidated groups have not yet been actually solved. In a good many cases also records were not available to show the capital put in. In every case current invested capital was affected by the computation of surplus or deficit resulting from the operation of prior years and such computation was, of course, a fruitful source of controversy. There is no question that the experience of the Government and taxpayers with the determination of invested capital was unsatisfactory and that this basis should not be used again except as a last resort.

To relieve against arbitrary results flowing from disparity in invested capital and income due to some abnormal condition or conditions applying in a particular case, it was provided that where such abnormalities were found the taxes could be fixed on the basis of the rate of tax in the cases of other representative concerns. This special assessment provision, while perhaps necessary, was found to be uncertain and vague in its application and was one of the most troublesome features of the excess profits tax.

It must be admitted, however, that Congress had certain substantial reasons for adhering to the use of invested capital for the purpose of measuring income subject to special tax. There had to be some method for determining the application of the tax to new concerns which had no pre-war income and also for determining the application of the tax in the case of concerns the income of which in the pre-war period was clearly subnormal. The necessity for meeting such cases was undoubtedly a factor in the determination of Congress to use invested capital as a measure of excess income. The case of new corporations or new enterprises, and of enterprises which were operating on a sub-normal basis in the pre-war period, would have to be provided for under any system. It is a matter for most careful consideration whether the application of the war profits tax should be made to depend in the normal case on the mere excess of war income over pre-war income, which would seem to be the sound and satisfactory theoretical basis, and whether, if this were done, the use of invested capital could be confined to the case of the new or sub-normal enterprise.

ANOTHER consideration of great difficulty in the formulation of a satisfactory war profits tax lies in the fact that the profit in a war year is itself affected by war conditions and when those conditions have culminated may prove to have been illusory. Suppose that a business concern to meet the demand for goods during the war purchases a new machine or builds a new factory. The amount so expended is normally treated as an investment and not as an expense. After the war, however, it may be that the additional machine or the new factory cannot be commercially used and will have salvage value only. If the war profits have been reckoned without allowance for this loss they have been incorrectly reckoned. It was to meet this situation that the deduction of a reasonable allowance for amortization was provided for by the 1918 act. The operation of that section also gave a great deal of difficulty. In formulating a war profits tax it might be possible to avoid or lessen the difficulty by providing that amounts expended for new facilities, if approved by some proper Government official or board, could be temporarily deducted in reckoning the profits, provided interest were paid on the amount by which taxes were so reduced. After the war the emergency value of the additions so made would be reckoned once and for all and the taxes properly adjusted. Some similar provision might have to be made to protect the enterprise against the ultimate loss in value of its basic inventories due to post-war deflation.

There is a question whether a war profits tax would have to be confined to business enterprises, whether it could be made to reach a business enterprise carried on by individuals and partnerships as well as by corporations, and whether it could be made to reach ordinary individual income. As to ordinary individual income, the determination in the last war was that reliance should be placed on the income tax and that rates should be made to begin at the right point in the scale and to reach such a high percentage that the proper amounts would be drawn from individuals into the public Treasury. The subject of the basis of income taxes in the event of war, the exemptions and the point of beginning of such taxes is one for the most careful study.

SUMMARY

THE ideal war profits tax for a national war emergency would bring into the Treasury of the Government the entire war profits. Because of the margin of error in the determination of profits of a business enterprise because profits do not all or in the main take the form of money, and the possibility of the destruction of the economic machine by taking more than the profits, the measure of the tax could probably not in practice be more than 80 percent. So far as possible war profits should be broadly treated as excess of income during a war year over pre-war income, the pre-war period to be the nearest representative period not vitally affected by conditions of the war. Special temporary deductions would have to be permitted in the determination of the profits to take account of probable results of post-war deflation. With such allowances war profits should be taxed at a maximum rate. The amount of income remaining after the deduction of the war profits tax should of course be subjected to income tax rates framed to meet the then existing conditions. A war profits tax so conceived would probably eliminate war profits. Post-war adjustments not taken into account in reckoning the tax would be very likely to absorb all or a large part of any amount of the profits which for practical reasons would not be taken from the taxpayer in the first instance.

Working out a carefully formulated war profits tax is a matter calling for the most careful effort on the part of some body of experts, who, uninfluenced by actual emergency conditions, could study the problem in the requisite detail and carefully formulate at least the framework of a statute which would be both workable and effective.

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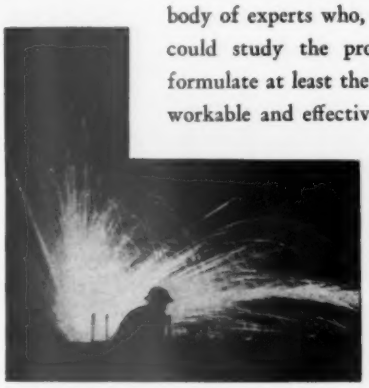
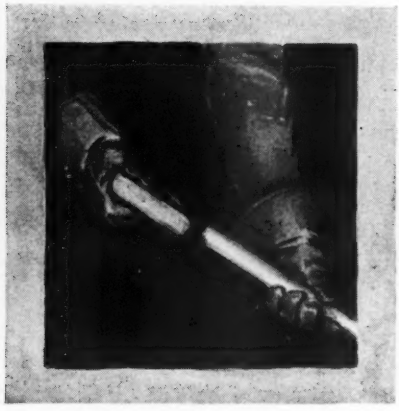




A Review of
MODERNIZED

A FEW years ago a number of men started to find an answer to the question as to whether coal mining could be completely mechanized. Using their mines as laboratories and with testing apparatus composed of cutting and loading machines, drills and explosives, locomotives and mine cars, timbers and roof jacks, these men conducted a series of experiments under all classes of mining conditions which have resulted in a decided affirmative to the question raised.

Today we are learning how to use this knowledge. Machine methods cannot be directly exchanged for hand methods and there is further experimental work to be done—modifications of mining systems, changes in operating technique, improvements in equipment and design—before complete coal mine mechanization is realized, but the coal industry is definitely and surely moving toward that end.

In the year 1930 the tonnage of bituminous coal mined by mechanized loading increased 23.7 percent over that mined in 1929. During this same period the production by hand loading into mine cars decreased 20 percent.

MECHANIZATION of modern industry has proceeded so rapidly and gone so far that it is difficult to understand why complete mechanization of coal mining has been so backward; especially since coal mining does not present any greater difficulties than those which have been met in the application of machines to other lines of work. In fact, it has one particular advantage in that it involves no change in the form of coal from its original position in the solid until it reaches the railroad car. It is simply a question of movement of material from one place to another. Compare this with the manufacture of steel, where there is not only movement but a continual change in form and composition from the iron ore to the finished product. There are, of course, special problems in coal mining which other industries do not have, such as roof support, ventilation, drainage and separation of impurities. These things do cause some complications when they must fit in with the requirements of a machine operation, but they are not a part of the chain of movement of the coal from the face to the outside.

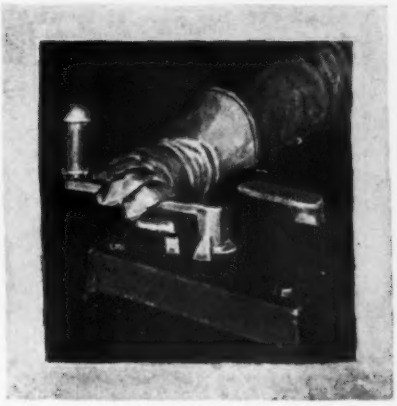
We are accustomed to say that coal mining is essentially a problem of transportation, but we usually mean that the process of gathering and haulage are the major operations. Going further into the subject, however, the loading operation itself is a matter of moving the coal. We may not be accustomed to consider this as an item of transportation, yet actually that is what it is. When the miner shovels coal into a mine car, or when a loading machine or a scraper or conveyor loads coal, they are all simply moving material from one point to another. Considered in this light, we can see that there is nothing fundamentally difficult in mechanizing the process and that in the ultimate the miner with the hand shovel cannot hope or expect to compete with the machine any more than a hand cart can compete with an automobile truck.

In order to present a discussion of the development of mechanization in the United States it is necessary to view this from several different angles. If we attempt to generalize we are limited by the fact that this development has not followed any one general line but has followed a number of individual trends and any generality has to be qualified by an exception. About the only unqualified general statement that we can make is that during the last five years the practicability of mechanical loaders, pit car loaders, scrapers, and conveyors has been demonstrated beyond any doubt or question and the tonnage loaded by these four classes of equipment in the mines of the United States has increased from 6,000,000 tons in 1925 to 50,000,000 tons in 1930. This latter figure includes both anthracite and bituminous.

This development has taken place to a greater or less degree in practically every coal mining state and under practically every seam condition of high and low coal, flat and pitching seams, impurities, draw slate, etc., that have been mined with hand loading. Mechanized loading is operating in union and non-union fields, under high wage and low wage scales, and its production includes anthracite and bituminous coals through the entire range from high to low quality.

Mechanized loading has not developed

Progress Toward
COAL MINING



By G. B. Southward

equally under each of the conditions just enumerated or in each of the coal fields, and since our interest is in trying to foresee what the future of mining machinery will be, it is important to consider the past growth in relation to the factors which have helped or retarded it.

Mechanized loading was not seriously considered or taken up by the coal industry on anything like a large scale until about 10 years ago. At that time the selling price of coal had begun to decline, but with wages still remaining at a high level, and the market continuing its downward trend, the mines were forced to the necessity of reducing their production costs. Mechanized loading seemed to fill this need and from 1922 to 1924 there were a large number of mechanical installations made—loading machines, conveyors and scrapers. These were put in with the idea that they could be substituted directly for hand loading, with a consequent increase in the tonnage per man employed. It soon became evident, however, that before this result could be attained both the machines and their method of operation would have to pass through a considerable experimental period. In other words, it was found that the purchase of a machine was not a short cut to lower mining costs.

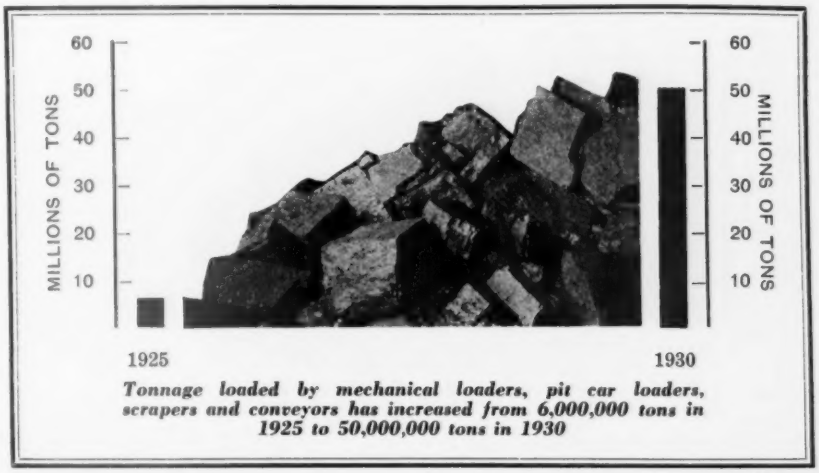
This being the situation, the coal mines were faced with two alternatives for reducing costs. One was to go through the experimental period and develop an economical machine operation. The other alternative was to retain hand methods and lower wages. Both courses were followed and are still followed, but mechanization is gaining steadily and rapidly while hand loading is on the decline.

In the development of mechanization the cost of mining has always been the determining factor and mechanized loading has not been adopted except where it could result in a saving. Since mechanized loading is used to some degree in every coal field, under a great variety of seam conditions and with several different types of equipment—and all are showing economies over hand operation—it is necessary to consider this subject in more or less detail. Statistics showing the progress that has been made with the present tonnages and their increase over preceding years have all been compiled and presented to the industry so that it is not necessary to repeat these figures here. Our real purpose is to determine in each case why the development followed along the lines which it did. In order to do this it will be best to trace the progress in the different fields.

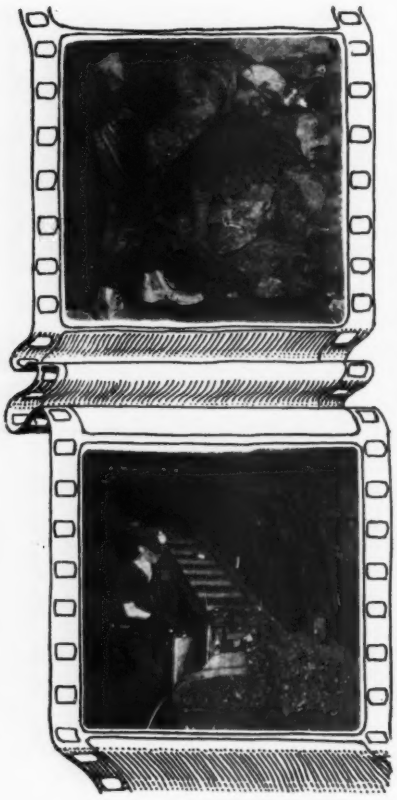
Before starting this, however, it is well to realize one fact—the reasons which have promoted and retarded the use of underground machines do not remain constant, so that factors which have existed in the past and which exist today may not have so much influence in the future.

A few years ago there was a decided opposition to mechanized loading on the part of organized labor and it was believed that this opposition would prevent any succesful development of mechanization by union labor until it had been forced on them by the non-union fields. At that time this factor was having a decided influence and had to be taken into account. Today it does not exist, and the direct opposite to the predictions of that time have happened.

For example, the three most highly unionized states—Illinois, Wyoming, and Montana—have adopted mechanized loading to such a degree that there is no state in the unorganized fields which is even a close second to these three leaders. At the present time Illinois is mining 70 percent of its output with mechanized loading; for the year 1930 Montana mined over 60 percent and Wyoming approximately 50 percent with machines. Compared to this the non-union states of West Virginia, Virginia, and Kentucky loaded about 98 percent of their tonnage by hand.



Tonnage loaded by mechanical loaders, pit car loaders, scrapers and conveyors has increased from 6,000,000 tons in 1925 to 50,000,000 tons in 1930



"The miner with the hand shovel cannot hope to compete with the machine"

A few years ago one deterent to the installation of loading equipment was the doubt that existed as to whether machines had a practical application or whether they would actually perform what they were rated to do. Today this factor has been eliminated—at least in the minds of those men who have taken the trouble to keep informed on the subject. There are, of course, still a number of doubtful points remaining to be answered, but mechanical performance of the different types of machines is no longer one of them.

A factor which is now preventing the installation of mechanized loading is the present unemployment situation in the United States. There are a number of mines who have their mechanization plans decided but are not willing to go ahead until their men who would be released by the installation of machinery can be employed in other industries. This condition, as we all believe, is only temporary, but it is nevertheless present.

Another deterring influence is the low wages paid in certain fields. It is recognized that mechanization would result in a saving in the labor used, but the scale now paid for hand work is so low that it is believed by the operators in some fields that machine loading with its consequent higher wage would not result in a sufficient cost saving to justify the expenditure for the equipment. This objection will sooner or later pass out of existence for either one of two reasons. First, is the improbability that these low wage rates for hand work can long continue. Second, is that the operating methods with mechanized loading are improving and the tonnages for a unit are increasing so that the margin between the production per man with hand loading and with machine loading is constantly diverging. Today quite a number of mechanical loaders are producing coal at a cost of less than 0.5 man hours per ton for all operations from the face to the main line haulage. Any further improvement will require competing hand mining to adopt the Chinese wage scale.

The most highly mechanized coal fields are Southern Illinois, the states of Wyoming, Montana, Central Pennsylvania, and Alabama. Each of these districts has different mining conditions than those in the others and uses different types of equipment and mining methods. Each field has had a particular reason for adopting the methods and equipment which it now uses and the history of the development in these states will pretty well cover the story of mechanized loading. However, in other fields where the percentage of mechanized loading is still very low there are nevertheless examples of operations with all types of equipment whose results are equal to those made in the highly mechanized districts.

Illinois and Indiana

Illinois and Indiana began their development with mechanical loaders about 10 years ago. The first operations were direct substitutes of machines for hand labor and with slight modifications in the gathering, track and in the width of the rooms this same method has continued to be employed.

About five years ago pit car loaders began to attract attention in this field and their use spread very rapidly. Their low purchase cost was an added inducement to those operators who were not sufficiently convinced of the practicability of mechanical loading to make the larger investment. Like a mechanical loader these machines were substituted directly for hand loading in the mining systems then in use.

In the early years there was marked opposition to the loading machine on the part of organized labor and for a certain period the union would not permit any further additions to those then installed. At the time this seemed a serious handicap, but it probably was the best thing that could have happened. It enabled those mines then using mechanical loaders to improve their operating technique and provided time for the manufacturer to perfect his equipment. If this had not been done it is probable that there would have been a number of failures which would have served to retard the progress. By the time the restriction was removed the success of mechanical loaders had been well demonstrated and the subsequent installations have proceeded with rapidity and with practically no failures.

The reasons why mechanical loaders and pit car loaders have been used in Illinois and Indiana to the exclusion of any other type of loading equipment is because these two units are so well suited for the level, thick seams of this section and can be directly applied to the room and pillar system which is almost universally employed in these two states. An added advantage is the fact that pillar recovery is not practiced to any great extent. This greatly simplifies the problems of mining in comparison with districts where a high percentage of pillar recovery must be made. It was the necessity for reducing labor costs, combined with the fact that a machine was developed at the psychological time which fit into the mining systems already in operation, that brought about the rapid and succesfsul development of mechanized loading in these two states.

Rocky Mountain States

The Rocky Mountain States became "machine minded" about the same time that this development began in the East. In Montana, northern Wyoming, and Utah the seam conditions are ideal for mechanical loaders of the mobile type, and these operations developed along the same lines that were followed in Illinois—substituting the machines in the

mining systems already employed. A further similiarity to the Illinois development lies in the fact that Wyoming and Montana are both working with organized labor, both are paying high wage scales, and in both states mechanization has gone forward very rapidly and with few failures. Pit car loaders have been introduced to some extent, but the greater part of the mechanization is still with the mechanical loaders.

In southern Wyoming the pitching seams were not suitable for a mobile type machine. Conveyors proved satisfactory for the grades, but they did not eliminate hand shoveling, and this section of the state wanted real mechanical loading. So they designed what is now known as the duckbill loader, and the story of its development is a particularly encouraging example of how adverse mining conditions can be successfully operated by a machine. The deciding factor in this case was the belief by the mining men of one company that some form of mechanized loading could be found suitable for these mines and their determination to find it.

Central Pennsylvania

Pennsylvania as a state does not mine a high percentage of its output with mechanized loading, but the low seams in the central part of the state have rather widely adopted conveyor and scraper mining. During the year 1930 approximately 4,000,000 tons of coal were loaded by these two types of equipment.

This development began about five years ago when Pennsylvania was faced with the same necessity of reducing costs which existed in the rest of the United States, and this was particularly acute in the low seams where the mining costs were relatively high. Since the seam heights would not permit the operation of mobile loading machines this district had no choice except conveyors or scrapers. Neither of these devices were directly applicable to the room and pillar systems used for hand loading, so that a complete revision of the mining plans were necessary. Out of the number of experiments which were tried two general systems have predominated—modified long faces for scraper mining and wide rooms for conveyor mining. Both of these methods are now in successful operation and have been so for some time. For a while the tonnage with each type of equipment was about equal, but in later years the tonnage mined with conveyors has been greater than with scrapers.

Mechanized loading is improving so that the margin between the production per man with hand loading and with machine loading is constantly diverging

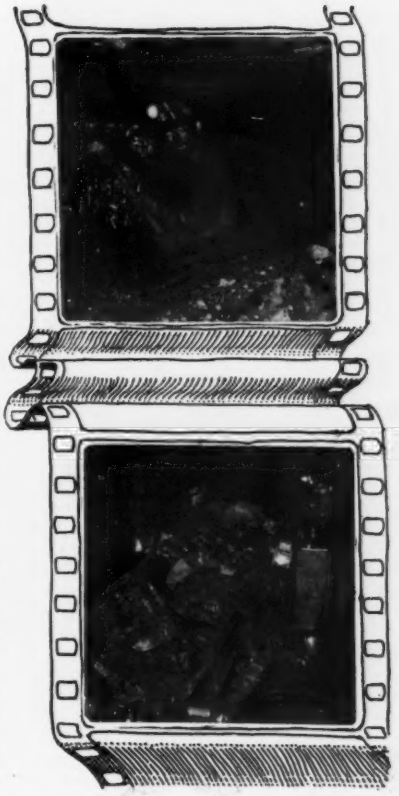
The system adopted for conveyors is to use a wide room—this is usually a single unit, but a few mines work double rooms with one haulage conveyor for the two. Plans now under way indicate that an extension of this idea will soon be put into effect and multiple rooms loading to a gathering conveyor will take the place of the single units now employed.

This field maintains a fairly high wage for conveyor and scraper mining, and it is becoming quite customary to pay a tonnage rate, which is divided between the men of the crew. This is a departure from other mechanized fields, where it is customary to pay on a day basis. Central Pennsylvania can take credit for developing a room and pillar system for conveyor mining that makes a high coal recovery and furnishes an outstanding example of how thin coal can be successfully mined with mechanized loading at a lower cost than is possible with hand loading into mine cars.

Alabama

In the mines of Alabama the thin seams, pitching veins, bands of impurities, and the necessity for mining a high percentage of lump coal present such difficulties to mechanization that it would naturally seem that they would be the last in the country to adopt any form of mechanized loading. Yet these mines were among the first in the United States to use this method and to use it successfully.

The early installations were with conveyors in long wall, and the reason for this development was the fact that the seam conditions were too severe for economic hand loading into mine cars. The mining system is true longwall with packs to subside the roof.



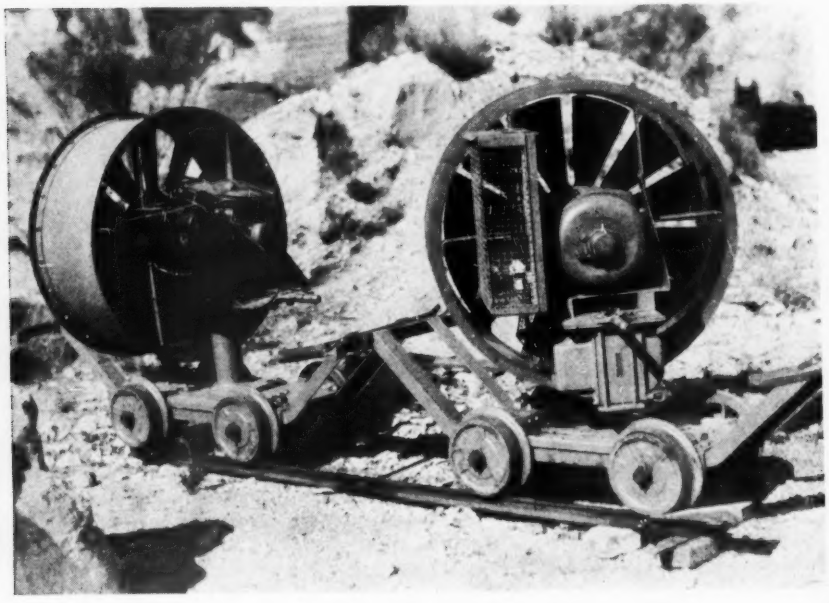
With the development of mechanized loading in other parts of the United States the mines of Alabama, with better conditions than those in the longwall district, have recently given their attention to pit car loaders, and in the year 1930 this state increased its mechanized loaded tonnage by more than 100 percent over the year 1929.

The mines in Alabama are particularly good examples of how practically every condition usually considered prohibitive for mechanized loading has been overcome. This includes the seam conditions already described, and in addition Alabama is working under a low wage rate, which in other fields is supposed to make mechanized loading noncompetitive with hand methods.

Pennsylvania Anthracite

The anthracite mines of Pennsylvania have started on a well-defined program for mechanizing the thin beds. Some years ago scrapers were introduced, and these were found to have a very successful application in thin seam work. This was partly due to a direct saving in the loading cost and partly from a higher production from (*Continued on page* 454)

"HAND mining is on the decline while mechanization is gaining steadily and rapidly."



Portable Mine Fans

*at Globe, Arizona**

By R. I. C. Manning†

PORTABLE mine fans, whether driven by compressed air or by electricity, are always an asset, and the uses to which they can be put are many and varied. The idea of a portable fan is not new. In 1921 B. O. Pickard‡ drew attention to their possibilities. The two fans owned and operated by the Globe-Miami Mine-Rescue and First-Aid Association, Globe, Ariz., stand out because of their unique construction.

These fans have been put to many uses by the various companies which comprise this association, but their most valuable service has been rendered at mine fires. At fires they have controlled air currents and cleared passageways of smoke to facilitate the work of fresh-air and apparatus crews.

It is important to be able to control air current during mine fires, especially so when the point of control is at or near the scene of activities.

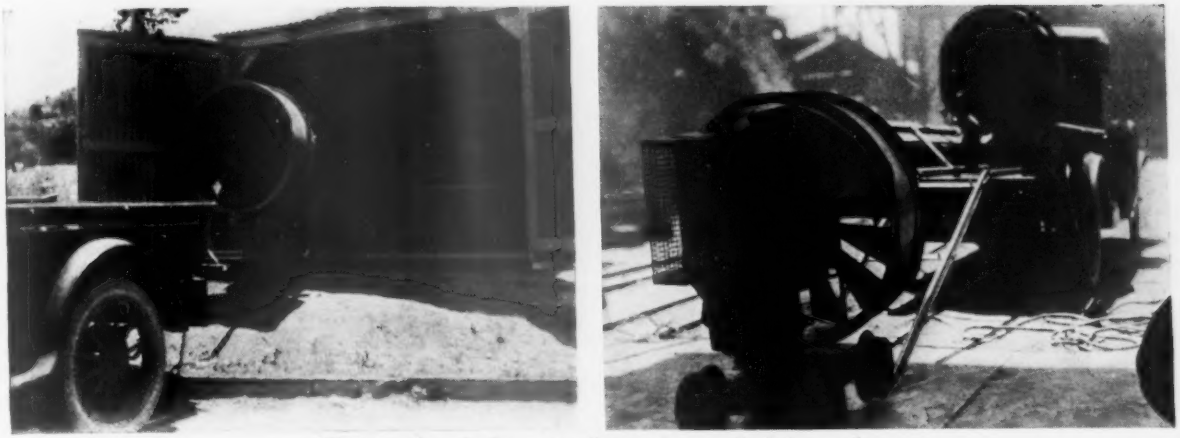
The Globe-Miami Association is under the direction of Orr Woodburn and is composed of four owning members—the Inspiration Consolidated Copper Co. at Inspiration, the International Smelting Co. and Miami Copper Co. at Miami, and the Old Dominion Co. at Globe—and of four associate members—the Arizona Commercial Mining Co. at Globe, Christmas Copper Co. at Christmas, Magma Copper Co. at Superior, and the Van Dyke Copper Co. at Miami.

* Published by permission of the Director, U. S. Bureau of Mines. (Not subject to copyright.)

† Associate mining engineer, U. S. Bureau of Mines, Safety Station, Bisbee, Ariz.

‡ Pickard, B. O., "Emergency Fans for Fighting Metal-Mine Fires." Reports of Investigations Serial 2240, U. S. Bureau of Mines, 1921, 3 pp.

§ Copies of detail drawings of these fans will be mailed by "The Mining Congress Journal" to anyone interested.



Photographs of the motor-driven fans and their trucks showing the shed for the fans and the methods of loading them on and unloading them from their motor trucks

In designing and constructing the two fans now in use, consideration had to be given to the various voltages, both alternating current and direct current, and to the track gauges of the mines which comprise the association in order to have fans readily adaptable to any condition in the mines. Accordingly, two fans were constructed—one driven by an alternating-current motor and the other by a direct-current motor, each mounted on mine trucks with adjustable gauges.§

Each motor is direct connected to the fan and is of 1 hp. The motor specifications are as follows:

Alternating-current motor.— Sprague repulsion motor, type R 588-6-1-510, form C; single-phase, 25-cycle, 110 or 220 volts (motor can be operated on 25, 35, or 60 cycles); 1 hp. at 510 r. p. m. A 2-kw. 440-220 transformer is attached, which permits the operation on 440 volts alternating current at any of these cycles. Three switches and terminals.

Direct-current motor.— Northwestern motor type K-2½; 1 hp. at 500 r. p. m.; 220 volts direct current, fully enclosed.

The fans are 36-in. Sirocco multiblade type, enclosed on the sides, and running at the speed given, under no static head, will deliver 40,000 cu. ft. of air per minute.

In each case both the motor and fan are mounted on a swivel plate and standard, which permits the fan to be swung in any direction horizontally, so that air currents can be delivered at any horizontal angle. By tipping the truck, air currents can be directed either up a raise or down a winze.

The all-steel truck is equipped with adjustable axles, which permit its use on 18, 24, or 30-in. track gauges. The axles also have slots for base-plate adjustment, so that the fan can be offset to either side of center to clear obstructions such as chutes.

Bumpers on either end of the truck, constructed of 12-pound rails, serve as handles for pushing or lifting the apparatus, as well as for protection.

Approximate over-all dimensions of the fan assembled, including the truck, are 66 in. long by 39 in. wide by 51 in. above the rail.

A portable reel and commutator mounted on steel supports and holding 500 ft. of 2-conductor cable constitute part of the equipment to make the apparatus workable in places where there is no electric wiring.

The fans are stored in a building provided for that purpose and equipped with track at the Globe-Miami Mine-Rescue and First-Aid Station.

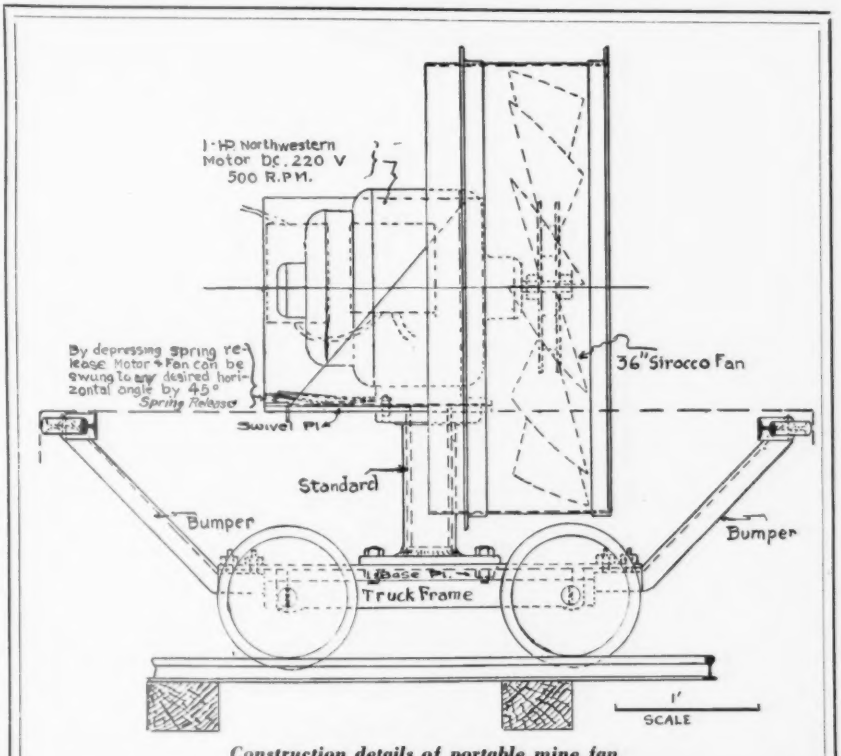
A special 1-ton truck also equipped with track is used to transport the fans. Two pieces of portable track are carried for loading and unloading the fans. Both fans can be loaded in 20 minutes at the station by one man. Two men are required to unload them at the mines.

The bumpers on these fans are removable to facilitate transportation.

The fans have been used intermittently since March, 1924, and have rendered valuable service at mine fires. They have also been used to ventilate dead-end workings in several mines of companies which belong to the association, as well as to boost ventilation temporarily.

They were run continuously for three weeks at one mine for ventilation purposes under normal mine conditions.

Both were constructed in shops of the mines. The total cost of parts for each was $410.



Construction details of portable mine fan

Trends toward
Better Mine Management

By P. C. Thomas
W. D. Brennan
T. R. Johns
Paul Weir
R. L. Ireland
I. N. Bayless

The following pages present views that are of genuine interest alike to coal and metal producers; they include a main paper presented to the Eighth Annual Convention of Practical Coal Operating Men, together with the discussion that followed. Mr. Thomas' paper will also appear in the Convention Proceedings Issue of The Mining Congress Journal, to be published in conjunction with all other papers presented to this meeting, which will be ready for distribution September 15.

THE EDITORS.

By P. C. Thomas*

IN the United States there always have been some well-managed bituminous coal mines, yet even these have fallen in line with those that were not operated as well as they might have been and have bettered their methods. There is no need to screen the fact that up to, say, 10 years ago, although much money was made in coal mining and coking, the properties were largely in the hands of superintendents and foremen. These men probably did their best, but as loaded cars were their main object, little mattered so long as their tally was high. Managers visited the workings infrequently, and vice presidents and presidents bothered little with details—profits were their principal worry; how and at what cost were of less importance.

Coal mining always lagged behind metal mining in management, and comparisons were often made regarding this; also as to methods and the class of technical supervision employed.

However, during the past 10 years, particularly the second half of this period, a steady and great change has been apparent to those who have been observant of conditions in the coal industry. Companies of standing work fewer mines, install the best equipment, employ the best talent as supervisors and workers as well as cater to their welfare, and everyone—from the president down—is awake to the necessity of the best performance of man and machine.

The closing down and abandoning of small and unprofitable mines and the concentration of mining in a few large units has been and is a prominent trend in recent operations, and we have examples of companies that once worked four mines now have only one, and more than 50 reduced to 20. These fewer workings can produce an equal or greater tonnage of coal at less cost.

Inasmuch as the American Mining Congress represents the coal-mining industry as a whole, and the writer is familiar only with certain fields in the eastern part of the United States, to make this paper representative he sent a copy of a questionnaire to 25 well-known company officials in 14 states, as follows:

Alabama, two; Arkansas, one; Colorado, one; Illinois, three; Indiana, two; Kentucky, one; Missouri, two; New Mexico, one; Ohio, three; Oklahoma, one;

* Vice President, The Koppers Coal Company, Pittsburgh, Pa.

Pennsylvania, three; Utah, two; West Virginia, two; Wyoming, one.

Most of the mines owned by these companies are large coal producers and have modern equipment and supervision. Replies were received from 20 of these men, and 12 states are represented; Arkansas and Missouri are not included in the replies. The total production represented by these replies amounted to 60,000,000 tons in 1929, which is 12 percent of the bituminous coal output of the United States for that year. Thanks are offered at this point for the prompt answers to the questionnaire, which were all-important to this paper.

THE QUESTIONNAIRE AND ANSWERS

The questionnaire consisted of the following items, followed by a summary of the answers and expanded opinion:

STAFF POSITIONS

1. Are vacancies in official positions filled from within your own organization or do you fill them from the outside for the purpose of injecting new blood?

Nineteen answers were "yes" or mainly so. If suitable men are available within the organization, they are promoted. There are times when a management has to go outside its staff for a particular man. Two companies endeavor to find the man best qualified without particular preference for insiders or outsiders. After experience of appointing men from within and without, one company became confirmed to the "within our own organization" policy. When mechanization of loading began, a departure was made from this for a while, but it was soon found advantageous to develop the experience and hold to the established and loyal men on the pay roll. Such promotion gives minor officials an incentive to be ambitious and excel in their work, but employment of outsiders discourages them. One company has this record: All vacancies have been filled within our organization with the exception of two general superintendents who were chosen in the past eight years; we anticipate our ability to take care of all future demands from our men trained on the property.

VALUE OF TRAINED MEN

2. Do you make a practice of employing technically trained men, and if so, in what capacities?

Everyone is agreed on this, but not all for all positions. These trained men occupy places on the staff from engineers and general superintendents to firebosses. One company employs them in all important capacities; another excepts superintendents and foremen. At one mine the young engineers are given the opportunity to follow any natural talent which they possess. A special effort is made by one company to place the sons of employes who have a combination of practical mining experience and are technically trained, and it looks forward to a future organization consisting of many of such men. One firm employs technically trained men in its engineering department only. Each year one group of mines adds a number of college graduates to its staff. They are started on time-study work, without authority or responsibility, and their advancement is subject to the development of their practical ability. One large operator encourages the procuring of technically trained men who are transferred from time to time to broaden their training. Superintendents and foremen frequently rise from the ranks, and they are well fitted to handle labor better than others. One company maintains a scholarship in mine engineering for some positions.

With regard to employment of mining engineers (not necessarily confined to coal mining), in the West they have been to a great extent responsible for elimination of the rule-of-thumb method, for many years a drawback to economics in coal mining.

COMPANY LOYALTY

3. What policy, if any, do you pursue to foster loyalty to the company among your men?

In brief, close contact between officials and men, a square deal, promotion, financial assistance, relief plan, good wages, group insurance, pensions, free information, and a genuine interest in the welfare of the men fosters loyalty. If their confidence is won, a company can expect the best of them. On the other hand, the management of a group of three companies reports limited success in instilling loyalty. One operator tries to make every man feel that he is an important part of its organization and that his advancement depends upon merits of his work. An industrial relations department whose prime responsibility is to establish relations between employer and employe, based on mutual interest, confidence, cooperation, and benefits is found to be of value in promoting loyalty. So is the publication of a monthly safety paper which promotes logical reasoning and loyalty to the industry. A prominent Alabaman thinks that one of the forces that has aided the trend of better management is the closer contact between higher officials of companies and their employes. An Oklahoman thinks this way also, particularly since the virtual passing of the miner's organization.

COMPANY MEETINGS

4. Do you have periodic meetings of department heads and operating officials, if so, how often, and who attend?

All of the operators answered in the affirmative, although one stated that instead of periodic meetings, the heads are in daily contact with their organization. The frequency of these meetings varies from daily to quarterly and semiannually and, when convenient, and those who attend range from the president to the mine foreman, or salaried employes, or department heads, or all who can be present. One western company holds a monthly review of conditions attended by operating officials headed by a vice president. One plan is to hold monthly meetings, one of which includes all department heads and another of miners and company men; the first is designated the foreman's committee and the latter the employes' committee. All questions pertaining to safety and efficiency are discussed. In a group of 20 mines, superintendents gather once a month and staff officials weekly. For the plant and division meetings of one operator, the procedure or what is to be considered is carefully planned in advance with the idea of getting the best thought, at the same time leaving unity of action in the minds of local officials. In sum, meetings are considered to be essential to the working of any property.

MINE DEVELOPMENT

5. Are your mines being developed according to some definite projection plan? What steps are taken to insure the plans being followed and whose responsibility is it?

As would be expected from such a group of coal producers, all develop their mines on a definite plan. To insure this being done there is frequent inspection and surveys, checking, and posting of maps. The responsibility rests with the vice president, management in general, chief engineer, general manager, company chief mine inspector, or superintendent. Section bosses at one mine must follow the directions given by the engineering department. At another the production department is responsible for holding to the layout. All entries in one group are driven and all rooms turned on sights which are given by the surveyor, when required; pillars are drawn according to a projection and a schedule. At a western group, when unexpected conditions arise, the engineers develop new plans for approval by officials. Development at an eastern group is carried on in conformity with forecast maps which are prepared by division engineers, in conjunction with the chief engineer and division manager, and approved by staff members, and the general manager, of operations. Sometimes difficulty is encountered in trying to adhere to the plans.

METHODS OF OBTAINING BEST RESULTS

6. Do you employ an efficiency engineer? If so, to whom does he report and what are his duties; and if not, what effort, if any, is made to obtain efficiency such as increased tons per loader, cars per locomotive, and other operations?

Only one of 20 operators employs a regular efficiency engineer; another does so occasionally; the remainder depend on their chief engineers, managers of mines, and assistants—getting the best results is part of their work. These engineers report to the vice president; sometimes to the president. An operator in the central field writes that each department head is his own efficiency engineer, and he is expected to maintain or increase the efficiency of the details in his department. He often places men for time-studies or particular observation when necessary. In the production engineering division of the engineering department of one large property the duties include those of the so-called efficiency engineer as well as many other duties—planning, estimating, scheduling, budgeting, and so forth. As to getting the best results in loading and hauling, there are daily reports of tons per loader and a monthly report of cars per locomotive; competition between superintendents and foremen; miners are supplied with plenty of coal and cars and motors operate on a prepared schedule; time-studies; constant

effort; and responsibility of mining engineer, electrical engineer, and maintenance engineer.

The question of haulage has received increased attention, particularly in the better application of power, larger units, larger mine cars, better track, resulting in cheaper transportation. Haulage equipment and tracks in one mine in New Mexico are maintained in the best possible condition consistent with economy.

In Ohio, one company gives constant attention to haulage in the matter of power, larger mine cars, and better track.

Haulage costs in one Utah mine have been lowered materially by having 4 to 7-ton cars with roller bearings, 56-lb. rails, small gathering locomotives, and long trips on main haulageways.

EQUIPMENT STANDARDIZATION

4. What methods are followed to have standardization of equipment?

Methods vary in this phase of mine operation, but more or less standardization is maintained or an atteempt is made to do so as far as possible or where possible. It is rather difficult at some mines to standardize, particularly as so many new machines are being developed, and at others the standards are revised occasionally. One method is to check all purchases to have equipment and spares as uniform as possible. When obsolete plant is to be replaced at one mine, standardization starts with the new equipment. This problem becomes a thought of operating heads and is frequently discussed at staff meetings. The cooperation of superintendents leads to more or less standard methods. Interchangeable equipment in a group of mines was the practice by one company, but the purchase of other mines somewhat upset this arrangement. However, in hand-mechanical loading only one type of machine is used, and in power-mechanical loading, because of the advance in machines, there had to be a little departure from the standard. The standardization of equipment does prevent the carrying of excessive stocks and repairs. If a company operates in several fields, local conditions do prevent complete standardization; but when in the same district the problem is relatively simple. In fine, uniformity of equipment is desirable and essential, within practical limits.

A Pennsylvania president admits that mechanization of mines has been progressing, but all mines do not lend themselves to mechanical loading. With a gradual lowering of the wage-scale and only a limited running time, the financial advantages of mechanization in many fields have become non-existent. The only justification for the capital expenditure necessary for mechanizing a mine is a market which will take the product of that mine running a reasonable number of days a week. With the current wage-scales in non-union fields where a mine is not operating over three days a week, the economy of machine loading is doubted.

A Utah manager is of the opinion that where their use is feasible, mechanical loading machines have been main factors in reducing costs at coal mines.

ACCIDENT PREVENTION AND WELFARE

8. Do you have a separate department in charge of an individual to look after accident-prevention work? (a) Do you have safety inspectors, and if so, how many does each inspector look after? (b) Do they have any other duties besides inspecting for unsafe conditions and practices? (c) Do you have 100 per cent first-aid training? (d) What is done, if anything, in the way of following up the activities of company doctors, public health matters, and smaller allied activities?

Six companies do not have such a department, 13 companies do, and one company considers that all are concerned in its safety work. The department may be in charge of a casualty manager, or of a trained safety engineer, whose duty it is to train men, maintain the rescue equipment, and take care of all accident and compensation cases. The practice of inspection varies—there are safety inspectors, foremen, and bosses, also, committees representing the labor union. There may be an inspector for one mine or for a group of two to four mines, and he may look after 30, 50, 100, 800 or 3,500 men. Most of these inspectors haven't any other duties. One policy regarding inspectors is to have a few men to each boss who has full authority and responsibility for safety and output. In the case of the mine with one inspector for 3,500 men, the company has many trained miners and therefore accidents have decreased; when inexperienced miners are employed more inspectors are required. In the foregoing it was remarked that at one mine all are concerned in safety work; the company does not believe in a separate department or individual to look after accident-prevention work, because it is a matter of such importance that from the management down it should be considered along with all major operating and selling features.

As to complete or 100 per cent training, half of the operators have had their men instructed in first aid, some of them try to, and some are nearly fully trained; the remainder have not. On January 1, 1931, a southern company established a rule requiring men to have first-aid training before they will be given a job, also that 90 days is given to those already employed to acquire such training.

With regard to following up the activities of company doctors, public health, and allied work, some operators watch the results carefully, others have the doctors report, others have the chief surgeon check the work, whereas others don't give much attention to it beyond what the doctors and public health officials do. In one case an experienced manager is assisted by labor representatives. Another producer finds that if company doctors look after sanitary conditions and the health of the men and their families, their morale is improved. Two others make regular inspection of company houses and surroundings and samples of domestic water. Another relies on general supervision by officials and superintendents. Contagious and other diseases card records from doctors in its mine villages are received by one company which follows up public health matters through a welfare nurse, welfare worker, and sanitary engineer. One division of one company maintains a fully equipped hospital.

The coal industry is constantly giving increased thought and effort to its accident-prevention work, with definite and profitable results. At one group in Alabama, matters are left less to the judgment of the worker, particularly in timbering, which has fixed rules and standards devised by engineers.

A great deal of constantly increasing thought and effort have been given to accident-prevention work in Ohio, and this should show definite and profitable results.

One Utah company makes every effort to promote safety within the mine and to instruct employes to observe safety rules so that danger may be seen, recognized, and avoided. It costs 2½ to 3 cents per ton of coal for this work.

MAINTENANCE OF DISCIPLINE

9. What methods of discipline are applied to insure observation of safety rules?

Apart from a central State operator whose methods depend on the support given by the Labor Union, discipline at the other properties is maintained by the usual reprimands, fines, layoffs or suspensions, demotions, and final discharge. Flagrant violations or one that involves serious consequences may result in discharge for the first offense. Three companies give each man a book of rules and expect him to study them and act accordingly. Competition for safety records between mines helps, so does cooperation between company and men. One corporation has the practice of making each boss who has an accident to one of his men appear before his superintendent to explain why; the superintendent has previously received a detailed report of the occurrence from the safety department. Foremen and face bosses are subject to the same discipline as miners and others if they permit unsafe conditions to exist.

COSTS

10. Do you have a separate Cost Department? Do you work up detailed costs for each section or only for each time, and to whom is this information given?

As would be expected, nearly all of these operators have a cost department, although this work may be done in the accounting or auditing department. The average practice is as follows: Detailed costs are worked up for each section, mine (mostly the mine), division, or department, and the information is given to all heads, general superintendents, mine superintendents, foremen, or to all concerned or to those who are interested. Daily cost sheets are compiled for each mine of three groups, available the next day. As to costs for each section, one producer finds this unnecessary save when some special information is desired, another prepared a monthly cost sheet for each section and for each individual foreman, showing both labor (100 men to each foreman) and supplies. An interchange of costs between officials of all

divisions is in vogue by one corporation. Another large producer in its operating department has a cost accountant who has the title of assistant chief of mine clerks. He supervises the preparation of cost data for each day period. Another system is cost accounting by jobs rather than by geographical sections.

A manager writes from New Mexico that their costs are kept in considerable detail, so that at the end of each month the different items can be compared with previous months and any irregularities called to the attention of those directly responsible and thus corrected.

An Ohio president believes that there is a definite trend toward better cost accounting, but there is still much room for improvement. It is known that some companies deliberately omit certain items of expense to show low cost during periods of low prices.

A president in Oklahoma states that the income tax and resultant checking and auditing of returns has brought about a great reform in mine accounting and compelled operators, who previously were indifferent, to employ auditors and bookkeepers who have put in proper systems of cost accounting. Continuance of fierce and increasing competition has so reduced prices and profits as to compel better mine management.

Cost accounting is necessary, one president in Pennsylvania answers; any reasonably intelligent operator must realize that; but when operating figures are persistently in red, it is a great temptation to leave out some of the cost figures. There is also a temptation to get work done on capital account instead of being placed against the cost of coal. That sort of thing has to be watched with special care when cost is higher than realization.

In Utah, a general manager answers, mine costs in detail are compiled by accounting departments at each of the mines, and these are forwarded to a central accounting department which handles the whole business. Costs are easily compared. Costs were reduced by two mines which now yield as much or more than five mines did formerly.

A West Virginia official states that his observation has been that while there has undoubtedly been a trend toward better cost accounting and more efficient management on the part of some of the larger companies, yet in the case of many, especially the smaller ones, it would appear that there has been little or no improvement along this line, particularly in knowing what is their actual production cost. Although there has been improvement in management, preparation, and other operations, there seems to have been little or no improvement in marketing methods, and this is where there is room for drastic change.

PURCHASES

11. Do you have a centralized purchasing department or does each mine buy its own supplies locally? Do you have a central store-house, and what practices are followed to secure minimum inventory in store-house?

All of the companies approached on this question replied in the affirmative; but with regard to having a central store-house, half do and half do not. At three groups there is a supply-house at each mine, and at two groups there is an interchange of materials, a practice in vogue at properties other than those concerned in this questionnaire. With regard to inventory, there are card systems, a daily balance of material on hand, or continuous inventory, and inventory once a month or several times a year. Two firms hold the purchasing departments responsible for minimum stocks. Another curtails buying when it is found that supplies are excessive. Supplies at several mines are purchased only on requisitions approved by the purchasing agent, superintendent, chief electrician, or master mechanic; and at one mine a daily record of supplies issued is given to the supervising officials and management.

INSPECTION OF COAL

12. Do you have coal inspectors, and if so, do they inspect at the face or at the tipple?

Excepting one mine with a daily output of 900 tons, all of the producers have coal inspectors, all at the tipple and several at both the face and tipple. Occasionally inspection is made at the face by one company, but this is done by underground men selected for the job. Another company's inspectors see that miners load clean coal, also as it is being dumped and as it goes over the picking tables. There is one practice of an inspector watching the coal as it is being dumped by a rotary dump at the bottom of the shaft to determine at which working face dirty coal might be loaded. All inspection is done at the working faces of one group of captive mines. Coal inspectors representing the sales department of one company inspect the coal on the tipples and occasionally at the face. At another mine the foreman inspects the faces, and at a Western mine the tipple boss.

The preparation of coal has gone forward in spite of low prices, and both the producer and the consumer know more about coal as a fuel today than they did several years ago.

One producer in New Mexico finds that it pays to give considerable attention to preparation, and men are employed to inspect carefully each railroad car of coal after it has been loaded.

In Ohio, the preparation of coal has been and is receiving considerable attention.

One Pennsylvania president tersely sums up coal preparation thus: "Coal is being better prepared; it has to be to sell at all."

One general manager in Utah feels that perhaps the mines in general have gone too far in the preparation of so many sizes of coal.

CONCLUSIONS

The whole purpose of this trend toward better mine management is to mine better coal, uniformly clean, and prepared for market with a minimum of accidents to employes and at the lowest possible cost, at the same time keeping our properties in the best physical condition and treating our employes as well as we can. Staff positions are mostly filled by men from within the organizations. Technically trained men are employed for most openings. Various systems are in force to foster loyalty to the companies. There are either periodic meetings of staff men or there is close contact among them. All mines are developed and maintained on a definite layout or plan. Evidently efficiency engineers are not popular, because they are not employed by this group of operators who expect efficiency from within. If possible, standard equipment is used or equipment is standardized for the particular group of mines. The majority have an organized accident-prevention department, although they expect a certain amount of what might be termed natural safety within the force. Discipline is enforced, as it should be, by warnings, suspensions, and dismissals. Cost accounting receives considerable attention, as do purchases. And coal is carefully inspected before it leaves the mine for the consumer.

By W. D. Brennan*

WHILE there are very many interesting points of view and different slants brought out in this paper, I am only going to dwell on the "Accident Prevention and Welfare" phase. Having, after many years of association with coal-mine operations, become thoroughly sold on the accident-prevention work, I

* President, The Utah Fuel Company.

always like to take the opportunity when offered to dwell on this subject.

I am not personally in favor of safety inspectors as the term generally implies. I feel that it is far better to impress on the entire operating organization that accident prevention is one of the major operating and salient features—this not only from the humanitarian point of view but strictly an economical feature. For illustration, comparing the operations of the Utah Fuel Company's mines for the years 1929 and 1930:

	1929	1930
Lost-time accidents	274	150
Days lost	47,542	2,652

Note: In the above for the year 1929 there are seven fatal accidents charged at 6,000 days each.

	1929	1930
Tons mined	728,548	551,901
Cost per ton for compensation incurred ..... cents..	6.04	1.59

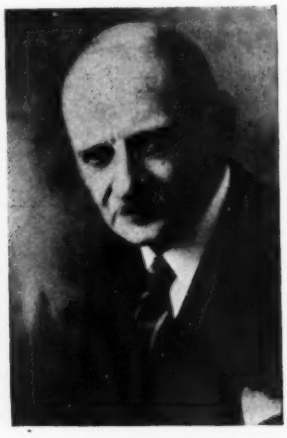
Having taken over the management of the Utah Fuel Company on the 1st of January, 1930, I take a certain amount of personal credit for this showing, feeling that through my efforts there was impressed on the operating organization the importance of accident prevention.

There was during this period no hesitancy on the part of the company to spend the necessary amount of money to make the mines safe where possible, and, in this manner, demonstrating not only to the official force but the entire organization that we meant to put over this accident-prevention campaign. We are still continuing our efforts along these lines and hope from year to year to show the same material decrease that we did in the two years past.

Every individual with authority of any kind is instructed to do everything in his power at all times to prevent accidents, and where carelessness on the part of officials is discovered, through investigation of accidents, penalties are imposed regardless of whom the individual may happen to be. We feel that through this procedure the matter is brought home to everyone concerned and the best results thus obtained. In lieu of the penalties and possible punishment for neglect, bonuses are offered, and where good results are obtained substantial awards are made.

Meetings of all operating officials who are connected with any one mine are held monthly, where general safety precautions are discussed, suggestions made, and the observation of safety rules debated. Also, at some of our properties, mass meetings are frequently held, where all employes are requested to discuss all salient safety features.

Careful records of various operations are kept, and these are posted in conspicuous places. When certain abnormally good results are obtained special awards are made to the mine or the community, such as free picture shows or dances for the entire community. In this manner it brings to the homes the accident-prevention thought.



By T. R. Johns*

As the mining and labor conditions are so variable in all of the mining districts, it is my opinion no standard rule can be applied to obtain better efficiency through management in any of the items that are a part of the production and cost of coal.

However, as the worries of mine management today and for some time in the past are mainly confined to efforts in reducing costs to meet competition in the selling price of coal, I will confine my thoughts to the three main divisions that comprise the figures in the make-up of the cost of coal, being labor, supplies, and overhead. The 12 questions discussed by Mr. Thomas are related in general to these three items.

I agree with Mr. Thomas' conclusion relative to the "Trend Toward Better Mine Management" being for the purpose of producing the best product at the lowest possible cost, taking into consideration the proper maintenance of our plants, the good treatment of our employes and accident prevention.

Labor represents approximately 70 percent of the cost of production and necessarily demands the greatest attention toward better mine management. I favor a strict division of responsibilities among all officials, including minor ones, in order to promote interest and desire to excel in their work. This method produces many excellent operating suggestions and ideas to management. This system, in addition to maintaining a policy of filling vacancies by promotions from within the organization, assures good discipine in obtaining satisfactory results in all items of good management. Time studies are an invalable aid in obtaining accurate facts for comparison about the different units of mine production, from the coal loader at the face to the railroad car on the siding. They are also very necessary in contemplating the installation of additional equipment or the replacement of existing equipment. I am positive that operators who have not resorted to time studies would find that they develop very surprising and interesting information about their operations, especially so at the time wasted at the working face and the inefficiency of the transportation system. I wish to assure you that all of our time studies are made by engineers developed in our own organization.

Concentration of working places is a goal toward which all of us should be ambitious to strive. Very few mines today are underdeveloped; most mines being deplorably overdeveloped. Intensive concentration will bring about an increased tonnaged from a decreased area, which will result in substantial cost savings in the items of transportation, ventilation, drainage, timbering, etc. It also will reduce the ratio of day men to loaders, which is a very important item for cost reduction.

I believe that management in its strenuous efforts for cost reduction should not overlook or slight the welfare of their employes and accident prevention. These items have a strong bearing on promoting and maintaining loyalty and devotion to the organization as a whole. You can not foster loyalty except through just and fair treatment, which policy we pursue.

Supplies represent approximately 15 percent of the cost of production. The elimination of waste is the most important feature in this item. The methods of elimination of waste are various. I would suggest periodic inventories, strict supervision by all mine officials, and care taken to employ a competent trained supply man. It is also necessary to have complete cooperation between the purchaser of mine supplies and the operating organization to obtain the highest quality of material and repair parts at competitive prices. A well-equipped machine shop, properly supervised, can repair and renew many items of equipment which formerly reached the scrap pile.

Overhead represents approximately 15 percent of the cost of production. The popular idea is that overhead charges can not be controlled. These charges, of course, vary, depending on the capital structure of different companies, and it is impossible to discuss this item generally. However, I believe that great care should be exercised in the purchase of new equipment to make sure that the additional expense to capital will be com-

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pensated by a reduction in costs due to these installations.

In conclusion, I believe that in the past most mining companies have guarded their mining costs too closely in their own organization.

A spirit of friendly rivalry and competition can be generated in a company operating a number of separate units by the free dissemination of all cost data to the responsible officials of the separate units.

The culmination of this spirit to its higher point will result in equalization of costs to a greater degree.

By Paul Weir*

I THINK that Mr. Thomas has made a very valuable contribution. The thing that impresses me particularly is the fact that his paper was not based upon opinion but upon actual fact. It undoubtedly represents the best thought in the industry.

There are several things that I might state in a little different manner than they have been stated in Mr. Thomas' paper. I feel very strongly that the success of any executive depends upon his ability to select and train proper understudies, so that when vacancies occur and promotions are made, it is unnecessary to step outside of your own organization to fill those vacancies. I think this is a very, very important thing.

I always have a feeling of pride when I have been able to select a man and train him and have him get along in my own organization. Naturally, I feel that I have failed when I find it necessary to go outside for a man for a certain job. Such a procedure, I believe, builds up loyalty in your own organization and gives your men somewhat of an incentive.

There undoubtedly is a trend toward the employment of technically trained men for all positions. It is very evident from Mr. Thomas' paper. There has been much said in behalf of the young engineer and also in behalf of the coal company. The attitude of some coal companies toward the young engineer is probably wrong, and the young engineer is probably wrong in his attitude toward employment with coal companies.

The young engineer who has studied four—sometimes seven years—undoubtedly knows quite a few things. The thing he probably lacks is the study of human nature. It is inconceivable to me that a boy who has gone to college four year or seven years, as the case may be, can not learn how to handle men. That seems to be the chief criticism of the young engineer. I think anyone who has the advantage of a college education undoubtedly can acquire the ability to handle men. Of course, quite a few engineers regard the handling of men as a mathematical problem. It isn't that. They must broaden themselves along liberal lines.

The failure of most engineers who have had an opportunity to go ahead in the production department of coal companies has been due, I feel, to that fact that they are too technically minded; they are unwilling to forget this technical training, and using their basic education learn to handle men.

A recent editorial in one of the trade journals pointed out the wonderful opportunities for young engineers in the mining industry. It went on to state that there was no set rule which any young engineer could follow to arrive at the top, and that no one would be able to tell him just how to do it. There are, however, several things that are quite vital in this respect. The thing to which I am attracted in any young boy out of school is willingness to work, willingness to master detail, willingness to study things which are not purely technical. I believe that if more technical men would forget some of their technical training and make an effort to acquire the science (if I may call it that) of handling men, that we would have a source of future executives in the coal-mining industry.

* Vice President, Bell & Zoller Coal & Mining Company.

By R. L. Ireland*

I READ Mr. Thomas' paper in advance with a great deal of interest, because it showed conclusively that the day of the old-fashioned management is pretty nearly at an end and there is some light for the coal industry in adopting new methods.

The biggest advancement in the trend toward better management is the fact that coal-mine operators are no longer trying to make a mystery out of coal mining and keep their performances secret.

An up-to-date management realizes that an interchange of information means that, while they only give out their own ideas, they get ideas from a large group and therefore are the gainers. We have found through adopting a policy of open house and welcoming all visitors that for every bit of information we give out we get about 10 ideas that are better than our own in return. So it is really a paying proposition. Some of the elders of our company frowned on the idea when we put it into effect, but they have learned through experience that it has really paid big dividends in helping to educate our operating organization.

Experience has shown that it is harder to train mine managements in modern

* Vice President, Hanna Coal Company.

methods than it is to train the miners themselves. Many companies have failed in their efforts at mechanization because they didn't first train their mine managements.

I remember very well that at one of these meetings several years ago some one got up in the discussion and said: "The trouble with this mechanization is that a fellow buys a piece of machinery, gives it a dinner pail, puts it in his mine, and expects it to perform, and you can't expect machinery to do it that way." There was never a truer word said.

Before you buy labor-saving devices, it is very essential that you get the foundations revamped to fit your new machinery, and when I refer to foundations I am speaking primarily of the mine management. We have found it necessary to pretty nearly forget everything we knew about the way to run a coal mine in order to take proper advantage of the opportunities afforded by modern machinery. Our experience has been that the men themselves on the pay roll take to new machinery very quickly. The big trouble is in getting the bosses to appreciate the possibilities of machinery and to supervise its operation from a new point of view rather than to try to adopt or rather to make new machinery fit into the old scheme of operation.

Any modern method of concentrated mining or mechanization can only be successful through the cooperation of all employes. To get this, all employes must be treated in the same manner as the monthly men. What I mean by that is this: That under the old methods of contract loading and cutting a large majority of the men to a great number of the officials were merely check numbers. Under mechanization, with its close supervision, every man on the pay roll is an integral part of the organization, and the man who operates a loading machine or who loads onto a face conveyor is, and must consider himself to be, just as important a cog in the successful operation of a mine as the superintendent or the foremen themselves. And it is only through getting this feeling of responsibility on the part of the individuals that mechanization can be made really 100 percent successful.

One of the greatest accomplishments of modern management has been its realization of the benefits to be derived by accident prevention. Accidents, in modern equipped and operated mines, are no longer accepted as an attendant result of coal mining, but are looked upon as negligence on the part of some one.

One of the failures in the past, I feel, has been the interruption of work through the accidents, and I have found, at least in the district where I work, that accidents have always been looked upon as something that is to be expected with production. In some places you got so many tons per accidents; in other places a few more, but accidents were a necessity that accompanied the business.

Our company doesn't feel that is true any more. Mechanization in and of itself means new methods which, in turn, work toward accident prevention. Therefore, if you are wholly mechanized, you have gone a long way toward eliminating the majority of the causes of accidents in the past. And, if your supervision of operations is as close as it should be, that same supervision is supervising accident prevention, so we have come to the conclusion that there is no reason for accidents in a coal mine.

Our company has a safety committee at each mine, composed of mine officials and pay-roll employes, who have authority to stop unsafe practices. We have monthly safety meetings to which all employes and their families are invited. At these meetings, in addition to discussing safety, cost figures are given out and discussed. Suggestions from everyone are welcome, and selling prices and market conditions are explained. We have carried the idea of open books right to the very limit. We have no secrets at all. We expect everybody who is on the pay roll to be as interested in the welfare of the company as the management itself is.

Through that, we have gone a long way toward solving this accident problem, and we have gone a long, long way in getting the type of cooperation, the type of forward-looking men that are necessary to devise these new methods that must be devised in order to take advantage of the modern machinery that is being provided us by the manufacturers. Therein we see the final Utopia of modern mine management.

By I. N. Bayless*

THERE is no question as to the trend to better management in coal mining. Any industry with as much money invested as the coal industry, who finds itself in difficulties, begins to take stock. This happened 10 years ago. Many companies found themselves with a number of mines that had been opened for years which could not be worked profitably due to the more recent developments of new and larger mines. Financial institutions began to demand that a decided effort be made to reduce costs.

Many managers awakened to the fact that little thought had been given to keeping step with other modern industries. At this time some of the more progressive managers began the development of mechanical devices for mining and loading.

At the same time the Bureau of Mines and the National Safety Council, together with the public, began to demand safer mining operations.

Presidents and managers began to take personal charge of operations and brought methods of management into the industry that were proving successful in other industries.

Campaigns of an educational nature were begun for the purpose of educating operating officials and men. It was found necessary to replace some men holding responsible positions. In other words, it was found necessary for managers and superintendents to produce or look for other jobs, with the result that many mining operations compare favorably with other modern industries today.

This has not been, nor is it, an easy task. It has been necessary to discard old methods and systems, developing systems for mechanical devices with more conservative mining. This has called for technically trained men, while the installation and manipulation of mechanical devices has called for a higher class of men both to handle and supervise.

A few years ago men of national reputation made the statement that the coal industry was the most mismanaged industry of the day, but with the honest effort, thought, and common sense methods of today we are bound to get *results*.

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* Asst. Gen. Mgr., Union Pacific Coal Company.

WHEELS OF GOVERNMENT

(From page 421)

authorized by the Transportation Act, owe the Government $24,000,000 under the law which authorizes the commission to collect the excess earnings. Shippers have pointed out that the railroads are not as bad off financially and from a credit standpoint as they claim, as railroads are paying 7 percent on all of their dividend paying stocks, have paid over half a billion dollars in dividends in the last few years and have a comfortable surplus.

Unemployment Situation

FROM the employment standpoint, the silver lining refuses to show itself in the dark cloud which has enshrouded labor during the business depression. Despite optimistic views of a change in the situation, administration leaders feel that the spectre of unemployment will continue to stalk up and down the land during the coming winter, and are making plans to avoid the resulting distress in its wake. It is estimated that the unemployment ranks will range between five and seven million men next winter and the President has been conferring with numerous advisers with a view to coordinating relief agencies. Business interests of the country, as represented by the U. S. Chamber of Commerce are to soon place in the President's hands plans which they are considering to stabilize business conditions and overcome the unemployment problem. The President is insistent in his opposition to Government doles, based on the unhappy experience of England and Germany from such a system, but believes the economic situation and employment problem can be solved by the concentrated efforts of the industries and the relief organizations of the country. Sentiment is increasing for a shorter week day and shorter daily hours of labor as a means of providing employment for those unable to secure a situation. Secretary of Labor Doak recently indicated that he favors a 5-day week and a 6-hour day without reduction of wages. The President is still adhering to his policy of opposition to wage reductions, and is credited with influencing the U. S. Steel Corporation and other large industrial organizations in their decisions not to reduce wages.

Continuous Tariff Discussions

THANKS to the activities of the national political party organizations, the tariff continues to be the subject of an almost continuous round of debate. Smarting under the wholesale and general attacks on the tariff bill as a whole from their Democratic colleagues, Republican Senators are countering with demands, issued through their national committee, that these critics point out the specific tariff rates which they condemn as being too high and which should be revised downward. The Republicans have expressed themselves as against a general revision of the tariff, preferring to have the Tariff Commission adjust rates up or down as the circumstances in each case warrant, which action has been facilitated under the reorganized policies of the Tariff Commission. Henry P. Fletcher, of Pennsylvania, who was commissioned a year ago by the President as Chairman of the Commission to reorganize its work, will resign from the Commission in November, advising the President that the Commission is now smoothly functioning and that he has accomplished the mission entrusted to him. Senator L. W. Dickinson, Republican, of Iowa, and Senator Pat Harrison, Democrat, of Missisippi, are slated for an early debate over the radio on the tariff, and Senators Watson, Republican, of Indiana, and Hatfield, Republican, of West Virginia, have questioned through their party organization, the position of Democratic Senators on the tariff. The tariff critics are accused of voting for duties on the products of their state and then denouncing the whole tariff bill, and are asked the specific rate reductions favored by them.

The Tariff Commission is making progress in the report requested of it by the Senate at the last session on the differences in the cost of production of copper in the United States and foreign countries. This report, which is expected to be ready when Congress meets again, will be the basis of probable action by Congress on a tariff on copper. The resolution of inquiry was sponsored by Senators from the three major copper producing sections—Montana, Arizona and Michigan.

War Commission

THERE has been a lull in the past few months in the proceedings of the commission recently created by Congress to develop plans to remove the profits from and equalize the burdens in future wars. This commission, headed by Secretary of War Hurley, and comprising several other members of the President's Cabinet and several Representatives and Senators, has received a large mass of testimony from representatives of veterans' organizations and officials who served in Government agencies during the last war. The commission plans to reassemble in the fall and to draft its recommendations to Congress along lines of requiring all persons and industries to serve their country during the war, either in the armed forces or in the industrial ranks, and to fix prices and wage rates so as to prevent future war profits.

Government's Huge Building Program

IT will soon be moving day for the Bureau of Mines and the other numerous and scattered branches of the Department of Commerce. The new 10 million dollar Federal building for this Department, which is the largest office building in the world, is rapidly nearing completion. Located on the edge of the Washington Monument grounds, the mammoth building housing the Commerce Department agencies will occupy the western end of a series of monumental governmental buildings which are in course of construction between the Capitol and the Treasury Department.

Historic old Pennsylvania Avenue is rapidly changing its appearance. Old structures are being demolished, and soon beautiful new buildings will lend grace and dignity to this magnificent approach to the Capitol. Rapidly official Washington is donning new garments, and beauty is emerging from what was once the apology of every loyal American. The Mall Triangle is assuming proportions, and the approaches to the Senate and House office buildings—to say nothing of the capitol buildings—are becoming suitable and compatible with our national dignity.

Committees in Session

OF the important commissions and committees which have been active during the summer are the Interstate Commerce Commission, with its rate investigation; the Tariff Commission; the Law Enforcement Commission; the President's Unemployment Committee; Senate Unemployment Insurance Committee; the Federal Trade Commission and its proposed investigation of interlocking power interests operating under permit from Federal Power Commission; the Joint State Muscle Shoals Committee; U. S. Timber Conservation Board, and last, but certainly not least, the Census Bureau which just has released some startling and extremely interesting statistics on mineral production, its monetary worth, its contribution to our industrial supremacy.

So, Washington goes on . . . conducting investigations, compiling statistics, helping and hindering industry . . . wheels within wheels . . . all conspiring to transact the business of a giant nation. . . . Washington, the great political arena; the storehouse of fabulous information; the cradle of undreamed of industry . . . fascinating, sometimes mysterious, busy, gay, and at all times intensely interesting . . . Washington!

Modern Mining *with* PIT CAR LOADERS

By G. B. Southward

The extensive use of pit car loaders which has come about in the last few years is one of the very interesting phases of the development of mechanized mining. It is unquestionably true that modern coal mining is tending toward the elimination of hand shoveling and this machine is regarded by many men as being merely an intermediate step from hand loading to all mechanical loading. If this were its only purpose it would still have performed a very useful service.

At the present time pit car loaders have a wide application and even if they are eventually supplanted by mechanical loaders there will still be a number of uses for these machines for some time to come. Such work as pillar recovery, completing panels in isolated territory or any place where the tonnage is not sufficient to justify the installation of a large mechanical loader.

Pit car loaders eliminate the greater part of the labor of hand shoveling and increase the production per man. They permit a certain amount of hand cleaning at the working face, they serve to systematize and concentrate the work and allow the drilling, shooting, timbering and track work usually performed by the hand loader to be done by more skilled labor. These advantages, both direct and indirect, have justified the present wide use of these machines.

TWO reports are submitted with this article on the operation of pit car loaders in room mining. These mines are in two different states and have dissimilar physical conditions—one having a seam 7½ ft. in thickness while the other is in coal less than 5 ft. The methods of organizing the work, the number of machines used, are different in each case, yet the total results are about the same in that both are producing with approximately the same number of man-hours per ton for the major operations from the face to the main haulage.

Comparing the general mining data shows that mine No. 5, which is operating in a thick seam, drives the rooms 28 ft. wide and takes an undercut 8½ ft. deep. Each room cut makes about 60 tons of coal, and as the pit car loaders are producing 39 tons per shift a room requires almost two working shifts for a cleanup. Mine No. 17, working a 4 ft. 8 in. seam, drives its rooms 24 ft. wide and takes an undercut 6½ ft. deep. Each room cut makes slightly over 30 tons and each pit car loader—producing at the rate of 64 tons per shift—loads out two rooms daily. Mine No. 17 therefore moves its equipment oftener than is required in mine No. 5, but the time consumed for this operation is not important enough to affect the production to any appreciable degree.

The number of men employed for the different operations and the tonnage produced by the machine varies considerably between the two mines. No. 17 employs three men for each loader, while No. 5 only uses two. Each man in No. 17 is actually loading more tons per day than in No. 5, but this is purely an individual matter and can not be attributed to the method of organizing the crew. It gives No. 17, however, an additional advantage of producing 64 tons per machine per day, while No. 5 is only producing 39. This, of course, reduces the investment charge at No. 17, which should be taken into account as a credit in this comparison. For gathering No. 17 uses four mules to serve eight pit car loaders. No. 5 uses one gathering locomotive to serve 10 pit car loaders. In this item mine No. 5 has a higher gathering efficiency and is producing at a saving of .023 man-hours per ton less than No. 17. In the face preparatory work No. 5 uses separate crews for the cutting and drilling. No. 17 uses the same crew for both of these operations and produces at a saving of .023 man-hours per ton over No. 5. However, No. 5 has a gain in investment cost as their cutting machine produces 195 tons in comparison with 169 tons of No. 17, and their drilling produces 390 tons as against 169.

The following summary is taken from the reports on the opposite page:

Comparison of Man-Hours Per Ton

	No. 5	No. 17
Cutting	.081	.094
Drilling	.036	
Shooting	.008	.004
Loading	.406	.378
Gathering	.040	.063
Timbering	.020	.016
Track	.033	.047
Total	.624	.602

Comparison of Tons Per Machine Per Shift

	No. 5	No. 17
Cutting	195	169
Drilling	390	169
Loading	39	64

A comparison of the man-hours employed as shown in the above summary shows several differences. To begin with, mine No. 17 produces with .022 less man-hours per ton than mine No. 5, yet there are several of the labor items in mine No. 5 which are less than those in No. 17. For example, No. 5 has a lower gathering cost and a lower cost for the track. If the best records of each of these mines are taken to form a theoretical composite or, to express it another way, if each mine could adopt the operating methods of the other mine where the cost was less we would find the following theoretical performances for both:

Man-Hours Per Ton

Cutting and drilling	.094
Shooting	.004
Loading	.378
Gathering	.040
Timbering	.016
Track	.033
Total	.565

MECHANIZATION SURVEY of The AMERICAN MINING CONGRESS

The American Mining Congress — Mechanization Division
Report No. 5

PIT CAR LOADERS IN ROOM MINING

GENERAL DATA		ORGANIZATION OF WORKING CREW	
Height of seam	– 7½ ft.– 1 in. slate	Cutting	– 4 men
Working places	– Rooms 28 ft. wide	Drilling	– 2 men
Tons per place	– 78 tons	Loading	– 20 men
No. places per shift	– 10 rooms	Gathering	– 2 men
Average tons per shift	– 390	Timbering	– 1 man
No. pit car loaders	– 10	Total	– 29 men for full shift
Mine cra capacity	– 2 9	Shooting	– 1 man for 2 hours
Depth of cut	– 8½ ft. undercut	Track	– 2 men for 6 hours
Cutting machines	– 2 shortwalls		

Distribution of Labor Employed

OPERATION	EQUIPMENT	No. Men	Hours Employed	Man-hrs. Employed	Tons Produced	Man-hrs. Per Ton
Cutting	2 shortwalls	4	8	32	390	.081
Drilling	1 electric	2	7	14	390	.036
Shooting	permissible	1	3	3	390	.008
Loading	10 pit car loaders	20	8	160	390	.406
Gathering	1 reel locomotive	2	8	16	390	.040
Timbering	wood posts	1	8	8	390	.020
Track work	30 lb. rail-steel ties	2	6	12	390	.033
				Total man-hours per ton produced		.624

The American Mining Congress — Mechanization Division
Report No. 17

PIT CAR LOADERS IN ROOM MINING

GENERAL DATA		ORGANIZATION OF WORKING CREW	
Height seam	4 ft. 8 in.	Cutting and	
Working places	Rooms 24 ft. wide	Drilling	– 6 men
Tons per place	32	Loading	– 24 men
No. places per shift	16 rooms	Gathering	– 4 men
Average tons per shift	508	Timbering	– 1 man
No. of pit car loaders	8	Track	– 3 men
Mine car capacity	1.27	Total	– 38 men for full shift
Depth of cut	6½ ft.	Shooting	– 1 man for 2 hours
Cutting machine	3 shortwalls		

Distribution of Labor Employed

OPERATION	EQUIPMENT	No. Men	Hours Employed	Man-hrs. Employed	Tons Produced	Man-hours Per Ton
Cutting and	3 shortwalls					
Drilling	3 electric	6	8	48	508	.094
Shooting		1	2	2	508	.004
Loading	8 pit car car loaders	24	8	192	508	.378
Gathering	4 mules	4	8	32	508	.063
Timbering	wood posts	1	8	8	508	.016
Track work	12 lb. rail-wood ties	3	8	28	508	.047
				Total man-hours per ton produced		.602

Robert E. Tally
President of the American Institute of Mining and Metallurgical Engineers

Mining Convention

Mining Congress Western to hold joint meeting

JOPLIN, Mo., in the heart of the great Tri-State lead and zinc district, will be host to several hundred mining men from all parts of the country the latter part of September when members of the Western Division of the American Mining Congress and the American Institute of Mining and Metallurgical Engineers gather for their annual meeting, which for the past few years has been held under the joint sponsorship of both organizations.

Plans for this mining convention were started last fall under the direction of C. F. Dike, governor of the Western Division, and M. D. Harbaugh, secretary, shortly after the division, meeting at El Paso, selected Joplin for its 1931 meeting, and arrangements are now practically completed for what promises to be a most noteworthy gathering of western mining men. Mr. Dike is vice president and general manager of the Interstate Zinc & Lead Company, and Mr. Harbaugh is secretary of the Tri-State Zinc and Lead Ore Producers' Association.

The A. I. M. E. will hold its meetings and have charge of the program on Monday, September 28, the first day of the meeting. The second day is given over to the sessions of the Western Division of the Mining Congress. A tour of the Tri-State district will feature the third day, followed by a barbecue and rodeo at Miami.

While the convention officially opens on Monday morning, September 28, and continues through Wednesday, the 30th, the Engineering Education Committee of the A. I. M. E. will assemble on Sunday afternoon at the Hotel Connor for a discussion of the present field for teaching mining engineering and the best plans of organizing for it. Dr. Charles H. Fulton, dean of the School of Mines and Metallurgy of the University of Missouri, is chairman.

M. D. Harbaugh
Secretary of Western Division, The American Mining Congress

The presidents of both mining organizations will be at the convention, and both are on the program as speakers. S. Livingston Mather, of Cleveland, president of the American Mining Congress, will address the convention on "Prosperity and the Mining Industry." Mr. Mather, as vice president of The Cleveland-Cliffs Iron Company, is recognized as a leader in the iron ore industry. Robert E. Tally, a former president of the American Mining Congress and now president of the Institute, will speak on "Commission Versus Private Regulation of Minerals." Mr. Tally is vice president in charge of smelting operations of the United Verde Copper Company and is very prominent in the copper industry.

A. I. M. E. Sessions

THE convention opens on Monday morning with Mr. Tally as chairman of the first session of the Institute. Victor Rakowsky, mining engineer of Joplin, and Charles A. Neal, president of the Tri-State Zinc & Lead Ore Producers Association, will make addresses of welcome, followed by responses by H. Foster Bain, secretary of the Institute, and J. F. Callbreath, secretary of the Mining Congress. The feature of this session will be an address by C. K. Leith, chairman of the Department of Geology of the University of Wisconsin, on "Problems of Mineral Surplus." Mr. Leith's paper is expected to invoke an interesting discussion of a number of questions which he will bring up. A review of the Tri-State mining industry will also be presented at this session.

The afternoon session will deal with the geology and ore deposits of the Mississippi Valley type, and Mr. Leith will act as chairman. H. A. Buehler, state geologist of Missouri, who will speak on "Geology and Ore Deposits of the Ozark Region," has recently been conducting extensive magnetometer surveys over a part of southeast and central Missouri and these are revealing some valuable information on the geology of the area. A similar survey is being extended into the Tri-State district and some of the results of this will be available by the time of the convention.

Messrs. W. M. Hayward and W. H. Tiplett, respectively consulting engineer and geologist for the Cia Minera de Penoles, will present a careful review of

at Joplin, Missouri

Division and A. I. M. E.

September 28 to 30

S. Livingston Mather
President of The American Mining Congress

the "Occurrence of Lead-Zinc in the Dolomite Limestones of Northern Mexico." In this paper will be presented studies of seven mining districts in three Mexican states including the results of thousands of analyses and observations.

"The Ore Deposits of the Tri-State District" will be covered by George M. Fowler and Joseph P. Lyden, consulting geologists of Joplin. The authors of this paper have made the most thorough study of the local deposits that has ever been made by anyone and their observations will be of interest to all who have followed the development of geological ideas on the Mississippi type of ores.

Western Division Program

THE Mining Congress sessions on Tuesday will center around the topic "Western Mineral Problems," with C. F. Dike, governor of the Western Division as chairman. J. F. Callbreath, secretary of the Mining Congress, is first on the program and will speak on "Problems Facing Mineral Producers." Mr. Callbreath has had his finger on the pulse of the industry for a good number of years and his extensive experience well qualifies him to present this subject.

H. Foster Bain
Secretary, American Institute of Mining and Metallurgical Engineers

James F. Callbreath
Secretary of The American Mining Congress

His address is expected to sound the keynote for the ensuing discussion and any official action to be taken at the meeting.

Mr. Tally delivers his address on "Commission Versus Private Regulation of Minerals" at this session, and is followed by Mr. Mather speaking on "Prosperity and the Mining Industry."

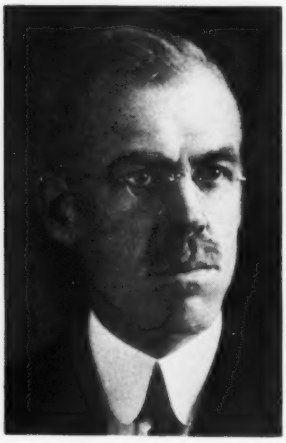
The silver situation will come into prominence at the afternoon session, presented by W. Mont Ferry, whose activities in behalf of the silver industry assure his audience of an up-to-the-minute and thorough discussion of this problem. Mr. Ferry is vice president of the Silver King Coalition Mines Company and president of the American Silver Producers' Association.

"National Revenue and Mining" will be presented by A. W. Dickinson, chief of the Tax Division of the American Mining Congress. Mr. Dickinson has had a wide experience in both the coal and metal branches of the industry; in the Michigan copper fields, the lead and zinc fields of Wisconsin, and more recently as general superintendent of mines for the Union Pacific Coal Company. At one time he was valuation engineer in the Income Tax Unit of the Internal Revenue Department, and is eminently qualified to discuss the problem of mine taxation.

Frank H. Probert, dean of the College of Mining of the University of California, and an authority on mining and mining economics, will deliver an address on "Stabilizing our Natural Resource Industries."

HEADQUARTERS for the convention will be at the Connor Hotel, and all sessions will be held there.

There will be a special luncheon for the board of directors and officers of the Institute on Monday, the 28th, and a similar luncheon on Tuesday for the board of governors of the Western Division and officers of the American Mining Congress. On Monday evening an informal smoker is to be held on the roof garden of the Connor Hotel, and Tuesday evening at 6.30 a banquet will be held at the same place. Charles A. Neal will preside as toastmaster and Secretary Bain, of the Institute, will give an account of some of his recent observations in Europe. Senator Cliff Titus, of Joplin, is also scheduled to address the banquet.



C. K. Leith

Frank H. Probert

THE field trip on the third day of the convention (Wednesday) will give everyone an opportunity to see in as much detail as possible the geology, prospecting, mining and milling methods of the district. The trip will include mines and mills in the principal zinc producing area in the world, the Eagle-Picher lead plants, and other points of interest. By way of diversion on the afternoon of that trip, following a barbecue luncheon at Miami, there will be an interesting demonstration of horsemanship by the famous Mounted Boys Troops of several towns in the district. The party will return to Joplin by way of the Ozarks, after a visit to the Bird Dog Mill of the Commerce Mining & Royalty Company.

The Tri-State region is very attractive during this time of the year and plans for the entertainment of the visitors call for making the most of the season. There are numerous points of interest to be visited. In Schifferdecker Park, Joplin, there has been developed during the last year a mining museum in which are very excellent displays of the ores of the district, of miniature mining and milling equipment both primitive and modern, and finished lead and zinc products. Cars will be available at all times during the convention to take delegates there and back, and a special excursion is planned for Monday at 5 p. m. as part of the convention program.

For all those who can stay longer than the three days allotted to the convention there will be opportunity to visit other points of interest in the region, including the coal stripping operations of the Pittsburg, Kans., district where some of the largest electric shovels in the world are used. To the geologists the tripoli deposits near Seneca, Mo., should be of considerable interest since they are the most important in the country. To the metallurgists the retort zinc smelters will be of special interest. Those interested in power generation will want to see the 125,000 horsepower steam plant of the Empire District Electric Company at Riverton, Kans., and the 10,000 horsepower Diesel engine plant of the Commerce Mining & Royalty Company, near Picher. Together these plants furnish all the electric power used in the field and municipalities in the vicinity.

Many of those at the convention will want to see the Cooperative Clinic at Picher which is maintained by the United States Bureau of Mines, the Metropolitan Life Insurance Company and the Tri-State Zinc & Lead Ore Producers' Association. This clinic is for the physical examination of mine employes and their families and the treatment of certain diseases. It has contributed much to the improvement of the health and the reduction of accidents in the mining field.

Since the slump in the mining industry and the consequent laying off of many miners there has been a marked increase in the number of small and primitive mine operations carried on in the old mining fields of the Joplin and Galena areas. At these diggings one may observe mining and milling of the type in vogue in the region many years ago—hand windlass and horse-whim hoisting, hand picking and hand jigging of ores. Many miners out of employment are in this way enabled to make a living.

Ample provision, of course, is made for the entertainment of the ladies who will come to the meeting. On Monday, following a luncheon at the Women's Club, there will be both bridge and golf arrangement for the fair visitors, and in the evening a dinner and entertainment at Cedar Creek. On Tuesday, a drive through the Ozarks, lunch at Ginger Blue Lodge, and returning by way of Buchanan's Farm for tea. The ladies are expected to join the field tour on Wednesday.

W. Mont Ferry

A. W. Dickinson

COMMITTEES

GENERAL ARRANGEMENTS

C. F. DIKE, *Chairman*
GEO. M. FOWLER
CHAS. A. NEAL
WADE KURTZ
W. T. LANDRUM
M. D. HARBAUGH
KARL KOELKER
C. N. ANDERSON
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J. E. HARSH, *Chairman*

ACCOMMODATIONS AND REGISTRATION

F. C. WALLOWER, *Chairman*

ENTERTAINMENT

L. G. JOHNSON, *Chairman*

WOMEN'S ENTERTAINMENT COMMITTEE

MRS. VICTOR RAKOWSKY, *Chairman*

EXCURSIONS

F. H. NESBITT, *Chairman*

PUBLICITY

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PUBLICATIONS

M. D. HARBAUGH, *Chairman*

Joint Meeting Program

WESTERN DIVISION OF THE AMERICAN MINING CONGRESS

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS

Joplin, Mo. September 27, 28, 29 and 30

SUNDAY, SEPTEMBER 27

2.00 P. M. *Round Table of Engineering Education Committee of A. I. M. E.*
CHAIRMAN: CHAS. H. FULTON.

MONDAY, SEPTEMBER 28

9.00 A. M. *Registration, Connor Hotel.*

A. I. M. E.

9.30 A. M. MORNING SESSION, Roof Garden, Connor Hotel.
CHAIRMAN: ROBERT E. TALLY.

ADDRESS OF WELCOME—

VICTOR RAKOWSKY, *Mining Engineer, Joplin, Mo.*
CHARLES A. NEAL, *President, Tri-State Zinc & Lead Ore Producers Association.*

RESPONSES—

H. FOSTER BAIN, *Secretary, American Institute of Mining and Metallurgical Engineers.*
J. F. CALLBREATH, *Secretary, The American Mining Congress.*

Announcements and Committee Appointments.

ADDRESSES

(1) REVIEW OF THE TRI-STATE MINING INDUSTRY
By

(2) "PROBLEMS OF MINERAL SURPLUS"
By C. K. LEITH, *Chairman, Department of Geology, University of Wisconsin.*

Discussion.

12.00 M. *Special Luncheon for Board of Directors and Officers of A. I. M. E., Connor Hotel.*

2.00 P. M. AFTERNOON SESSION.
CHAIRMAN: C. K. LEITH.

Geology and Ore Deposits of the Mississippi Valley Type

(1) "GEOLOGY AND ORE DEPOSITS OF THE OZARK REGION"
By H. A. BUEHLER, *State Geologist of Missouri.*

(2) "OCCURRENCE OF LEAD-ZINC ORES IN THE DOLOMITIC LIMESTONES OF NORTHERN MEXICO"
By M. W. HAYWARD AND W. H. TRIPLETT, *Geologists, Cia. Minera de Peñoles, Monterrey, Mexico.*

(3) "THE ORE DEPOSITS OF THE TRI-STATE DISTRICT"
By GEORGE M. FOWLER AND JOSEPH P. LYDEN, *Geologists, Joplin, Mo.*

5.00 P. M. *Excursion to Mining Museum, Schifferdecker Park, Joplin.*
8.00 P. M. *Smoker, Roof Garden, Connor Hotel.*

TUESDAY, SEPTEMBER 29

American Mining Congress, Western Division

9.30 A. M. MORNING SESSION, *Roof Garden, Connor Hotel.*
CHAIRMAN: C. F. DIKE, *Governor, Western Division*

Western Mineral Problems

(1) PROBLEMS FACING MINERAL PRODUCERS
By J. F. CALLBREATH, *Secretary, American Mining Congress.*

(2) REGULATING MINERAL PRODUCTION TO MEET DEMAND
By ROBERT E. TALLY, *Vice President and General Manager, United Verde Copper Company.*

(3) PROSPERITY AND THE MINING INDUSTRY
By S. L. MATHER, *Vice President, The Cleveland-Cliffs Iron Company and President, American Mining Congress.*

12.00 M. *Special Luncheon, Board of Governors, American Mining Congress, Connor Hotel.*

2.00 P. M. AFTERNOON SESSION.
CHAIRMAN: GEORGE W. POTTER.

Western Mineral Problems

(1) THE WORLD SILVER SITUATION
By W. MONT FERRY, *Vice President and Managing Director, Silver King Coalition Mines Company, and President of the Silver Producers Association.*

(2) NATIONAL REVENUE AND MINING
By A. W. DICKINSON, *Chief, Tax Division, The American Mining Congress.*

(3) STABILIZING OUR NATURAL RESOURCE INDUSTRIES
By FRANK H. PROBERT, *Dean of the Department of of Mines, University of California, Berkeley, Calif.*

6:30 P. M. *Banquet, Roof Garden, Connor Hotel.*
TOASTMASTER: CHARLES A. NEAL
RECENT OBSERVATIONS IN EUROPE
By H. FOSTER BAIN.
ADDRESS
By SENATOR CLIFF TITUS, *Joplin, Mo.*

WEDNESDAY, SEPTEMBER 30

All Day Field Trip to the Mining District. Leave Connor Hotel at 9.00 A. M.
Inspection of Kansas-Oklahoma Field from Blue Mound.
Inspection of Mines and Mills.

12.00 M. *Barbecue Luncheon at Miami, Okla.*
1.00-2.30 P. M. *Rodeo, Miami Fair Grounds.*
Boys Mounted Troop of America with Boys from Miami, Okla., and Baxter Springs and Columbus, Kans.
Visit to Bird Dog Mill.
Return to Joplin via Ozarks.

Idaho Meeting Considers Silver

At a conference held at Boise, Idaho, the latter part of July, proponents of silver stabilization unanimously agreed to concentrate their efforts toward an international silver conference. Those attending the conference and subscribing to this view were Senators William E. Borah, John Thomas and Reed Smoot; W. Mont Ferry, president of the American Silver Producers' Association; J. O. Elton, manager of the International Smelting Company; George W. Snyder, manager of W. F. Snyder & Sons; and Frank B. Cook, of Salt Lake City.

The object of the conference will be to arrive at an international agreement establishing a reasonable ratio between gold and silver. Every effort is to be made to keep the conference nonpartisan so as not to muddle with party politics the merits of silver as an economic resuscitator for world trade and finance.

In a statement to the press issued and signed by the Utah and Idaho senators, the conference was described as being essential to the rehabilitation of silver.

"The world-wide awakening to the importance of the silver problem," the statement said, "has resulted in an agreement among leading authorities that stabilization of silver as money should be made by the nations of the world.

"Press dispatches from world financial centers indicate the great need for immediate action to avoid the collapse of the great credit structure upon which international trade depends.

"To place the matter squarely before agriculture, industry, labor and statesmen it is necessary that some specific plan be agreed upon by the many powerful groups which realize the discrepancy between the comparative price of commodities and human labor on the one hand, and the inadequate and diminishing gold supply on the other.

"To this end, conferences are being held among the leading students of this vital question. Furthermore, it is deemed vital that the question be kept out of partisan politics although it is recognized that action by the president and the congress will be necessary under sympathetic and courageous leadership.

"It is the conviction of Senators Smoot, Borah and Thomas that a constructive program will be worked out which will meet the approval of the financiers, economists and statesmen, and which will be a prime factor in restoring world stability and prosperity.

"It is unanimously agreed that an international conference is essential to the rehabilitation of silver."

Wolflin Heads Utah Mine Station

The appointment of Hugh M. Wolflin, of Los Angeles, Calif., as supervising engineer of the Intermountain Experiment Station of the United States Bureau of Mines, Salt Lake City, Utah, is announced by Scott Turner, director of the bureau. Mr. Wolflin will immediately assume his duties, and it is believed that his appointment is logically the first step in carrying out the bureau's plans for increasing the general usefulness of the Intermountain station.

At the Intermountain station, research is being conducted in metallurgy, health and safety of miners is being promoted, economic and statistical studies are being made, and mining investigations are under way.

"One of the bureau's most important mine-safety stations," said Mr. Turner "is at Salt Lake City. The activities of mine-safety car No. 9 are now directed from this station, and the bureau's safety activities in Utah, Idaho, Montana, eastern Nevada and western Wyoming are centered here.

"Under the new plan, the Salt Lake station will be headquarters of 23 employes of the bureau of mines, and nearly $100,000 will be expended each year in the conduct of the federal mining activities grouped at this station. It is believed that the proposed reorganization of the station's work will result in greater benefits to the people of Utah and nearby states."

U. S. GOLD OUTPUT GAINS—PRODUCTION OF SILVER IN 1930 LOWER

Gold production in the United States last year totaled 2,285,603 ounces with a value of $47,247,600, increasing in value by approximately $1,600,000 as compared with 1929, the Bureau of Mint, in cooperation with the Bureau of Mines, announced in a summary published recently.

Silver production, on the other hand, declined by more than 10,500,000 ounces as compared with the preceding calendar year, the total for 1930 having been 50,748,127 ounces, valued at $19,538,029. The value of silver was placed at 38.5 cents per ounce, the average New York price of bar silver.

The figures were based on arrivals at United States mints and assay offices and at private refineries. The analysis represents the final estimate of refinery production during the year. The year of largest production for both metals was in 1915, when gold amounted to $101,035,700 and silver to $74,961,075 ounces. Production for 1930, as compared with the 1915 peak year, showed a decrease of $52,788,100 in gold and 24,212,948 ounces in silver.

California led in gold production in 1930, yielding 450,289 ounces valued at $9,308,300. Production in Alaska totaled 407,356 ounces, valued at $8,420,800, and that of South Dakota, 406,297 ounces, valued at $8,398,900.

In silver production Utah led with 14,451,266 ounces, having a value of $5,563,738. Idaho ranked second, with 9,710,150 ounces, valued at $3,738,408, and Montana third, with 8,596,966 ounces valued at $3,309,832.

The Mining Congress Journal will furnish copies of these gold and silver production figures to readers requesting them.

Copper to Germany on Long-Term Credits Proposed

Reports from New York state that a suggestion that the United States sell copper to Germany on long-term credits has been favorably received in copper circles.

It is possible that a plan will be worked out, it was said, although to date the matter has not gone beyond the academic stage of discussion.

Proposals that copper be sold to Germany on deferred-payment terms are understood to have emanated from Germany. When the Washington Administration some weeks ago offered to sell wheat and cotton to Germany on credit, that country came back with a suggestion that copper also would be acceptable if terms could be arranged.

How much copper Germans would buy, the price and the terms of payment are all questions to be determined, according to press reports.

It is said that a three-year credit would be extended to Germany if that country should decide to purchase a substantial amount of the copper stocks. It is believed here that Germany would be willing to purchase a considerable quantity of copper if the terms suited her manufacturers.

International Zinc Cartel

At the meeting of zinc producers at Paris the international cartel was declared effective from August 1 with the objects of the cartel the clearing up of stocks and the adjusting of future production to consumption. Members of the cartel have a combined production capacity of 1,123,000 metric tons of zinc a year. This represents 97 percent of the European and overseas capacity of the world, exclusive of the United States.

European Aluminum Cartel Doubtful

The international aluminum cartel, involving the most important producers of Germany, France, and Great Britain, and at least one producer each in Switzerland, Austria, and Norway, will probably cease to exist after December 31 of this year, when the agreement expires, according to the Commerce Department. Difficulties have arisen since establishment of the cartel in 1926, especially in connection with contingents on the European market. In 1926 the entire world production of aluminum was only 195,400 metric tons, of which Europe was accredited with 111,800 tons, compared with a total production in 1930 of 273,400 tons, of which not more than 50 percent was produced in European plants owing to the expansion of American interests.

"The Trust's greatest difficulty," says a report to the Commerce Department, is in the fact that the members have taken to price cutting in order to keep their plants occupied to normal capacity. Even if it should be possible to reach an agreement by January 1, it seems probable that a further reduction in prices will be inevitable owing to the volume of aluminum in stock, amounting to 150,000 tons of which 17,000 tons have accumulated in Germany."

SOUVENIR BOOKLET FOR JOPLIN MEETING

An elaborate souvenir booklet is being prepared for the delegates to the joint meeting of the Western Division of the American Mining Congress and the American Institute of Mining and Metallurgical Engineers, to be held in Joplin, Mo., September 28 to 30.

The cover of the booklet will be of silver coloring to look like metallic zinc or lead concentrates, while the printing and illustrations on the cover will be in black. It will contain chapters on history and development, geology and prospecting, mining, milling, smelting, costs and statistics, maps and illustration, according to M. D. Harbaugh, secretary of the Western Diision, and will answer most of the questions about "What We Have Here," and "How We Do Things."

Stockholders to Vote Sept. 21 on Phelps Dodge, C. & A. Merger

The acquisition of the Calumet & Arizona Mining Company by the Phelps Dodge Corporation is to be voted on September 21 at special meetings of the stockholders of both companies. Phelps Dodge stockholders will also decide a proposed increase in capital stock from 3,000,000 shares of $25 par value to 6,000,000 shares.

In letter to stockholders discussing the proposed acquisition, L. S. Cates, president of Phelps Dodge, says it is desirable to merge the two companies, as owing to their situation, important economies can be effected if they are operated as a unit.

Stating the merger is constructive from the standpoint of the copper mining industry, the letter says: "Phelps Dodge Corp. has been making plans to bring the large Clay ore body into production at Morenci. This deposit, while not yet equipped, will eventually be one of the large low-cost copper producers of the world. If a consolidation is made, the Clay ore body can be held in reserve and its development can be deferred. In the meantime the merged companies can obtain low-cost production from Bisbee and Ajo."

Mr. Cates states that besides the New Cornelia property at Ajo, Ariz., Calumet owns 2,099 acres of mineral land in the Warren district adjacent to the property of Phelps Dodge Corp., so that the combined holdings comprise a practically unbroken area of about 7,300 acres, lending itself admirably to single management.

Directors of Calumet & Arizona in a letter to stockholders state that they believe the proposed plan of consolidation safeguards the interest of Calumet & Arizona stockholders and that "as a result of the combination the very large ore reserves from which the combined company will be able to produce low-cost copper for many years, combined with its fabricating and marketing facilities, will make possible greater returns to you in dividends than can be expected under a continuance of the present independent operation.

"Phelps Dodge Corp. owns practically all (99.9 percent) of the stock of the Nichols Copper Co., which operates two refineries in the United States having an aggregate annual capacity of 500,000,000 pounds. Nichols Copper Co. also owns a 15 percent stock interest in Canadian Copper Refineries, Ltd., which recently completed a copper refinery at Montreal with an annual capacity of 150,000,000 pounds of copper. Nichols Copper Co. has for several years refined the copper of your company on a toll basis.

"Phelps Dodge also owns all of the stock of National Electric Products Co., which is one of the largest fabricators of copper in the United States, with a capacity of over 200,000,000 pounds of copper products a year.

"At present Calumet & Arizona confines its operations to the mining and smelting of copper, and your directors have felt for a number of years that it should purchase or build a fabricating plant to provide a satisfactory outlet for its products. It will be seen from the foregoing that the consummation of the combination, if approved by the stockholders of both companies, will provide for a complete mine-to-market operation and the combined company will mine, smelt, refine, fabricate and market copper and copper products through its own organization."

Copper interests in Arizona are seeking the cooperation of Utah mining interests in securing a duty of 6 cents per pound on copper.

William Coxon, secretary of the Arizona Corporation Commission, has been in Utah delivering a series of addresses under the auspices of the Utah State Federation of Labor.

143 Asked to Bid on Shoals Lease

A definite plan for the leasing of Muscle Shoals to private interests was indicated the middle of August, when the commission recently created by President Hoover to decide upon a policy for handling the plant sent to 140 chemical, power, steel and kindred concerns invitations for bids for the leasing and operation of the plant.

Similar invitations were extended to three farm organizations and to "all interested parties."

The commission can not grant a lease without approval by Congress but the reception of bids will permit the organization of a definite program to be recommended by the President.

Aluminum Sleeping Car to be Built by Pullman

The Pullman Company will build an aluminum sleeping car for experimental purposes. The type of car is said to have been decided on, although all the details have not yet been worked out. The Aluminum Company of America is cooperating with the Pullman Company in this connection.

It is understood that the use of aluminum will effect a substantial saving in weight as compared with the present standard steel cars.

It is estimated that the aluminum Pullman can be built at a saving of as high as 30 percent to 40 percent in weight over the present all-steel car, which weighs in the neighborhood of 160,000 to 170,000 pounds, depending on interior design. Steel, of course, will continue to be used in wheels, trucks, brakes and springs.

Copper Production Shows Decline

A drop of 27,669 tons in production of smelter copper throughout the world in July in comparison with the same month last year, was reported by the American Bureau of Metal Statistics.

The total output was 121,260, a daily rate of 3,912 tons, against 148,929 tons a year ago and a daily rate of 4,804 tons. Output for June this year was 126,722 tons or 4,224 tons daily.

Average deliveries of copper for consumption in Great Britain during the first half of 1931 were 11,299 tons monthly, in contrast to 12,382 tons for the average monthly quantity in the first half of 1930. Deliveries in Germany averaged 15,506 tons monthly against 14,181 tons in the corresponding 1930 period.

MINE CENSUS SHOWS CONSUMPTION OF FUELS, ELECTRIC ENERGY AND MACHINERY PURCHASED

Summaries covering the consumption of fuels and electric energy, and purchases of machinery and other equipment by the 39 branches of mining and quarrying industries have been published by the Bureau of the Census, covering operations in 1929.

Marked decreases in the consumption of anthracite and bituminous coal between the years 1919 and 1929 are revealed by the decennial survey which is made by the Government. Offsetting these decreases are increases in the consumption of other fuels and electric energy. The total cost of purchased electric energy increased from approximately $27,200,000 in 1919 to about $71,700,000 in 1929. The increase occurred principally in the coal and metal mining industries, which also showed the most marked decline in coal consumption.

Of the 8,825,007 short tons of bituminous coal consumed by the mining industries, the bituminous branch used 4,524,467 tons. The total consumption of anthracite was 5,223,195 long tons, of which 5,044,989 tons were used by the anthracite industry.

The data shown for the purchase of machinery and other equipment represent the first effort of the Bureau of the Census to compile such information. The figures cover such expenditures for 1929, and do not include installation costs, outlay for parts, repairs, overhauling, supply, etc., nor construction costs for buildings, etc. The total reported was $84,506,000.

The summaries are classified by both industries and states.

The Mining Congress Journal will send copies of the complete reports to anyone requesting them.

Silver Production of World in First Half Declines

Silver output for the first six months of this year totaled 87,017,000 ounces, according to the report of American Bureau of Metal Statistics against 108,890,000 ounces in first half of 1930.

Production from mines in the United States at 2,207,000 ounces for July compares with 2,433,000 in June and 3,551,000 in July, 1930.

Mexican production for the first half of the year amounted to 46,155,000 ounces, a decline of 28.4 percent against the corresponding period a year ago. Monthly average so far this year is 7,683,000 ounces which is 12.5 percent below the average of 8,767,000 ounces for all of last year.

International Tin Pool Is Formed

An international tin pool has been formed with the concurrence of the Bolivian, Nigerian, Malayan and Dutch Governments, which recently signed an international tin quota agreement.

Tin to be acquired by the international pool will be released in accordance with a sliding scale of prices accepted by the four governments, according to an official communique issued by the committee of control. An initial release of 5 percent of the pool's holding of the metal will become effective if and when the average price of spot tin on the London Metal Exchange shall during any completed calendar month have exceeded £150 per ton.

The pool will work in close cooperation with the International Tin Committee, whose chairman will act as chairman ex-officio of the committee of control of the international tin pool.

U. S. Lead Stocks Declined in July

The July figures made public by the American Bureau of Metal Statistics show that refined stocks of lead in the United States in the hands of producers at the end of July amounted to 133,958 tons, representing a decrease of 5,740 tons. This decrease was due to the fact that shipments exceeded output. The refined shipments in July amounted to 42,219 tons and 5,165 tons greater than in June. The July total was the highest for any month since November, 1930. As compared with last year, however, there has been a noticeable falling off in shipments. For the first seven months of this year domestic lead shipments total 257,511 tons, whereas in the same period last year they were 408,168 tons.

Total production of refined lead in the United States in July was 36,566 tons as compared with 34,391 tons in June, an increase of 2,175 tons.

Personals——

D. D. MUIR, Jr., of Salt Lake City, vice president and general manager of western operations of the U. S. Smelting, Refining & Mining Company, has been elected governor of the Utah Chapter of the American Mining Congress. Other officers elected were: J. W. Wade, O. N. Friendly, M. J. Dailey, vice governors; A. G. Mackenzie, secretary. The executive committee consists of: J. O. Elton, W. Mont Ferry, D. D. Moffat, W. J. O'Connor and Mr. Muir.

HAROLD E. LEE, assistant research metallurgist and assistant professor of metallurgy at the University of Idaho School of Mines, has joined the staff of the Bunker Hill & Sullivan Mining & Concentrating Company at Kellogg, Idaho, as research metallurgist.

PROF. P. B. BUCKY, assistant professor of mining at Columbia University, New York, recently visited at the Utah Engineering Experiment Station, and consulted with Dr. Lyon about problems in the mining and metallurgical fields.

DR. H. A. BUEHLER, state geologist, Missouri, spent several days at the Utah Engineering Experiment Station, Salt Lake City, the latter part of July to consult with Dr. D. A. Lyon, director of the station, regarding maters of mutual interest to both of their fields.

Dr. Buehler went on to Los Angeles after his stay in Salt Lake City.

RALPH E. SMITH has been appointed assistant to the Commissioner of Internal Revenue, U. S. Treasury Department, to succeed H. F. Mires who recently resigned to enter private practice. Mr. Smith is a graduate of the College and Law School of Wisconsin University. From 1911 to 1915, he was a member and for three years president of the Wisconsin State Board of Control. In 1925 he was appointed a special attorney in the General Counsel's office of the Internal Revenue Bureau, and in 1925 he was made head of the Civil Division.

A. W. WITHERSPOON, of Spokane, has been elected vice president and a member of the board of the Hecla Mining Company to succeed the late W. J. C. Wakefield.

HOWARD N. EAVENSON, of Pittsburgh, has been elected vice president of the Boone County Coal Corporation, with mines in the Kanawha, W. Va., district. It is understood that Mr. Eavenson will assume some of the duties formerly performed by the late Col. W. M. Wiley.

G. E. LYMAN, of Glen Carbon, Illinois, has been promoted to the vice presidency of the Madison Coal Corporation, with mines in Southern Illinois, and has taken over the management of that company.

T. J. O'BRIEN, of Denver, has been made vice president and sales manager of the Kemmerer Coal Company, Gunn-Quealy Coal Company, and Pinnacle-Kemmerer Coal Company, with mines in Colorado and Wyoming. Mr. O'Brien was formerly general sales manager for the Kemmerer Company.

CLYDE G. BREHM, formerly assistant general superintendent and safety director of the Oliver & Snyder Steel Company, has been appointed supervisor of safety and compensation for the Susquehanna Collieries Company and the Lytle Coal Company, with headquarters at Wilkes-Barre, Pa.

J. A. MALADY has been appointed Pittsburgh district representative for the Post Glover Electric Company. His offices are at 406 Empire Building, Pittsburgh.

ARTHUR ALLEN has been appointed superintendent of the Republic Mine in Fayette County, Pa., owned by the Republic Iron & Steel Company, to succeed William G. Fowler, resigned. Mr. Fowler had been with the steel corporation for the past 20 years.

A. J. MOORSHEAD, president of the Madison Coal Corporation, Chicago, has resigned that position after a career of 30 years in the bituminous coal industry. Mr. Moorshead will make his home in Los Angeles.

Obituary

W. J. C. Wakefield, of Spokane, Wash., president of the Standard Silver-Lead Mining Company, and vice president of the Hecla Mining Company, died July 5. He was one of the founders of the Northwest Mining Association in 1895 and that organization's first treasurer. He was born in Ludlow, Vt., in 1862, and graduated from Dartmouth in 1885. He taught school at Austin, a Nevada mining camp; was admitted to the bar in San Francisco in 1889 and immediately came to practice law in what was then Spokane Falls. Mr. Wakefield established the law firm of Wakefield & Witherspoon, which is one of the leading authorities in the Northwest on mining and corporation law.

Charles Welling Badgley, mining and metallurgical engineer, died of heart failure on July 15, at his home in Herculaneum, Mo., at the age of 46 years.

At the time of his death he was assistant superintendent, smelting division, of the St. Joseph Lead Co., having come to Herculaneum in that capacity in October, 1923. Prior to this time he held responsible positions with the A. S. & R. Company, Standard Chemical Co., Western Chemical Co., and Cia. de Minera de Penoles.

Mr. Badgley was a graduate of the Colorado School of Mines, class of 1906.

C. G. WEITZELL, 77, former president of the New Pitsburgh Coal Company when it was a subsidiary of the Pittsburgh Coal Company, died at his home in Logan, Ohio, July 31, after a lingering illness of two years. Mr. Weitzell served as superintendent of one of the company's mines in the Hocking Valley field, was promoted to vice president and general manager and still later to the position of president.

Gasoline Taxes

State gasoline taxes on August 1 averaged 4.09 cents per gallon, or more than one-third the actual price of gasoline, which averaged 12.01 cents per gallon as reported to the American Petroleum Institute from 50 representative cities. The average tax rate thus has reached a new peak.

COAL SHIPPERS MAKE MOST DETERMINED OPPOSITION TO FREIGHT RATE INCREASE

Washington Hearings Concluded

Testimony in opposition to the plea of the railroads for a 15 percent increase in freight rates was presented to the Interstate Commerce Commission in Washington during hearings which opened August 10 and were concluded on the 20th.

Evidence before the Commission at the conclusion of the hearings indicated that opposition to the railroads' request for a 15 percent freight rate increase is coming largely from producers of raw materials and that manufacturers are making little organized protest.

The most determined opposition, so far, has come from the agricultural and coal industries. Few of those who testified in opposition to the advance in charges represented manufacturing industries, which originate about a third of the railroads' income from freight.

The iron and steel, oil and textile industries did little to oppose the advance in rates, although one steel company and a few of the smaller oil companies protested.

With the Washington hearings finished, the Commission had an outline of arguments for and against the increase.

The railroads asked for the higher rates as an emergency measure, contending their earnings this year had fallen to an estimated 2.2 percent of valuations, whereas they are allowed 5¾ percent by law.

They maintained that unless given some relief their bonds would soon be taken off the list of legal securities for savings banks and insurance companies. In some instances, they said, this had already been done.

A 15 percent increase, they estimated, would leave their return at less than 4 percent, but would produce about $400,000,000 in additional annual revenue.

The opposition contended that increased rates would intensify the business depression, upset industry, work hardship on industries already in a precarious condition and reduce, rather than augment, rail revenues by diverting tonnage to cheaper forms of transportation.

The hearings in Washington, with Commissioner B. H. Meyer and Examiner William A. Disque sitting, were intended for eastern interests only. New England shippers presented their evidence before Commissioner C. R. Porter, at Portland Me., and Northwestern opponents appeared before Commissioners E. I. Lewis and William E. Lee, at Portland, Oreg.

The presentation of evidence began July 15 with railroads giving their side of the case.

Coal rates are exempt from strict application of the 15 percent increase because of differentials fixed by the Commission in an effort to equalize competition between the various fields. The method of applying the increase proposal consists of raising the basic rate 15 percent and then adding the cents per ton thus arrived at to related districts without regard for percentages. The result is that some districts would be increased more than 15 percent and others less.

The authority of the Interstate Commerce Commission to grant the increase was challenged by representatives of six Middle Western state railroad regulatory commissions. In a petition, presented August 10, they contended a financial emergency alone was insufficient basis for authorization of the advance in charges. Their motion for dismissal was laid aside by the Commission for consideration at a later date.

Disaster for the overseas export coal trade if the railroads increase their freight rates was predicted at the session on August 11. Arthur Hale, chairman of the Coal Exporters Association, said an increase in tidewater coal rates would wipe out foreign shipments of coal and result in a loss of $4,000,000 a year to the carriers.

William T. Coe, New York, of the Consolidation Coal Company; A. C. Davies, Berwind-White Coal Mining Company, and C. W. Hendley, Baltimore, of the C. W. Hendley Company, added their testimony to that of Mr. Hale in opposition to export coal rate increases. Mr. Coe testified if freight rates were advanced his company would be compelled to discontinue the sale of coal abroad. The company's chief competitors in Germany and Poland already have been aided by railroad rates, he said.

Mr. Hendley said increased rates would eliminate his company from the foreign business and destroy a trade built up through many years.

Representatives of the National Retail Coal Merchants Association and the New England Coal Dealers Association appeared August 18 and told the Commission their organizations were opposed to any increase.

Milton F. Robinson, Chicago, president of the Retail Coal Merchants, testified he had sent a questionnaire to 5,300 coal dealers in 40 states and the District of Columbia and that 88 percent of the replies were definitely against an increase. Mr. Robinson said the dealers felt that increased transportation charges reflected in increased coal prices would drive many consumers to oil, gas and wood for fuel, thus reducing the tonnage on the railroads to a point where the 15 percent increase would be nullified.

In the Northwest, he said, sawdust is available for fuel and many farmers throughout the country already have stopped using coal and are cutting their own wood. Coal would be moved by

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motor truck from the mine, he said, to communities nearby which now are getting their coal by railroad.

A. B. Jessup, of Jeddo, Pa., president of the Anthracite Coal Operators Association, stated on August 19 that any increase in coal rates would promote incursions into American coal markets from Wales, Scotland, Russia and Germany, which can bring coal into the United States duty free.

He said most of the anthracite-using population of New England lives within 30 miles of the seacoast. If rates are increased as the railroads propose, he said, Pennsylvania mines would have to pay 57 to 93 cents more a ton than at present for freight while importers would have the old ocean rates and could ship to points 50 miles inland for an increase of only 19 cents.

E. J. McVann, traffic manager for the Property Owners Committee of the bituminous coal producers of Virginia, southern West Virginia, eastern Kentucky and Tennessee, presented exhibits to show how the coal industry since 1919 had lost 121,962,509 tons of annual production through consumers using hydroelectric power, fuel oil and natural gas, and, in addition, 99,759,138 tons through more efficient methods of burning coal.

Mr. McVann said the producers were not hostile to the railroads, but that they believed the proposed increases, if granted, would fail to yield any additional revenue to the railroads and would prove disastrous to the coal trade.

An increased use of substitute fuels and possible installation of pipe lines to transport pulverized coal to market were predicted August 20. The situation in the coal industry with constant loss of tonnage due to use of hydroelectric power fuel oils and other substitutes for coal was discussed by Walter A. Jones, secretary of the Central Pennsylvania Coal Producers Association; H. L. Findlay, of Cleveland, representing Ohio interests; Frank S. Carr, of New York, representing the National Contractors Protective Association, and O. L. Alexander, of New York, representing the Virginia, West Virginia, Tennessee and eastern Kentucky producers.

Mr. Alexander, who is vice president of the Pocahontas Fuel Company, which produces 6,000,000 tons of coal a year, asserted unequivocally that the railroads would not realize an increase in revenue through increases on coal rates.

"The railroads must realize," he said, "that their continued failure to assist the coal industry and their willingness to even put additional burdens on it will force it to devise ways and means of providing substitute transportation for its product.

"The trend of tonnage to water transportation and trucks and the establishment of central power stations at the mines are subjects with which the Commission is familiar.

"You may not know that high-pressure pipe lines for transporting pulverized coal from the mines to consuming centers are being considered at the present time."

Mr. Jones and other witnesses presented a mass of statistics showing the increased use within recent years of substitutes for bituminous coal. Mr. Jones estimated hydroelectric power alone in New England and the Middle Atlantic States had displaced 6,237,000 tons of coal in 1930, while use of fuel oils for domestic heating had increased from 600,000 barrels to over 23,000,000 in eight years.

He recommended that if the Commission found an increase necessary it would be better to prescribe a flat increase of cents-per-ton. The railroads have proposed a method of increasing coal rates which would advance charges by more and less than 15 percent in various sections.

FEDERAL REGULATION OF COAL INDUSTRY PROPOSED

A proposal that the Federal government regulate the coal industry as a public utility was discussed at a meeting of Pittsburgh coal operators early in August.

The meeting which brought forth the proposal had been called to discuss the invitation sent by Secretary Lamont and Secretary of Labor Doak to the operators to meet representatives of the United Mine Workers in Washington to see if anything could be done to rehabilitate the industry.

It was the consensus of the operators that nothing would be gained by conferring with the miners' representatives, since the wage question is only a side issue.

The main problem to be solved, it was pointed out, is curtailment of excessive production. If overproduction could be prevented, it was said, the price of coal would rise and the wage question would take care of itself.

Press reports quoted a spokesman of the coal men as follows:

"Two or three years ago if anyone had proposed Government regulation to the operators it would have thrown them into a rage and they would have denounced it as Bolshevism.

"Now they are inclined to welcome it as the only way out.

"They see nothing ahead of them, as things stand now, but the loss of their properties through their inability to sell coal at a profit."

As an alternative to Government regulation of the coal industry as a public utility it was suggested that a national coal domain be established and the Government called upon to buy mines and close them, not only to prevent overproduction but also to conserve the supply for future generations, as is being done in the oil industry.

Consideration by the Governors of Pennsylvania, West Virginia and Ohio of a plan to use the police powers of those states to control overproduction of coal, as applied to the oil industry in Oklahoma and Texas, was urged recently by J. T. M. Stoneroad, president of the Carnegie Coal Company.

Mr. Stoneroad, in a statement, suggests that Governor Pinchot take the leadership to help a crippled business and relieve unemployment.

His plan is that Governor Pinchot request the Governors of West Virginia and Ohio to meet with him in conference to discuss the proposed plan, which he believes will be generally acceptable; that mine operations be reduced to four days a week so that mine labor can be distributed at a fair wage-return for miners and a just profit for invested capital.

Mr. Stoneroad said that economists and operators alike agree that overproduction in the coal industry is the main cause of its unhealthy condition. This overproduction, he said, has brought about such competition in sales that ruinous prices for coal and reduced wage rates to the miners have resulted.

"If production in the competitive states of Pennsylvania, West Virginia, and Ohio could be controlled, the industry in those states will rehabilitate itself and give great impetus to a return of reasonable prosperity in those states," he declared.

"The difficulties in dealing with remedies recently have been discussed in the public press. It seems to me the remedy now being more or less arbitrarily applied in the oil industry by the states of Oklahoma and Texas is entirely applicable to the coal business in Pennsylvania, West Virginia and Ohio."

Anthracite Laboratory Has Approved 28 Heating Devices

The Anthracite Institute Laboratory has now approved a total of 28 hard-coal heating devices in connection with its campaign to standardize anthracite burning equipment.

In commenting upon this work, Director A. J. Johnson points out that the laboratory in this particular field performs a twofold service to the anthracite consumer. "It acts as a medium of development for anthracite equipment and as an incentive for better equipment because of the establishment of a high standard of performance."

He praised the high degree of cooperation being received from equipment manufacturers in all sections of the country. "This cooperation is reflected in the fact that more than 100 hard-coal burning devices have been submitted to the laboratory for complete investigation." These devices, Mr. Johnson added, are divided into three classes: First, tests incomplete; second, devices which are being developed with the cooperation of manufacturers and inventors; and, third, devices which failed in test and have been returned to the manufacturers or inventors for possible further development by them.

Anthracite Service Conducts Eighth Sales-Service School

The Anthracite Service opened its eighth Five-Weeks Sales-Service School on July 20, with an enrollment of 14 representatives of the retail coal trade drawn from four states. Classes were conducted from July 24 to August 21. The first three days of the training period were spent touring the anthracite mines and collieries and receiving first-hand instruction in the modern methods of mining and preparing anthracite.

Not including the 14 men in the school just completed, the Five-Weeks Sales-Service School of the Anthracite Service initiated but a little more than a year ago, has trained and graduated 166 representatives from more than 100 retail coal companies throughout the anthracite consuming area of the country.

High Production Costs, Competition, Hurt Belgian Coal Industry

Increased production costs, the slackening of the consumption of coal on account of depression, and the keen competition of foreign coals in the Belgian market have contributed to bring about a situation in the Belgian industry which is the cause of serious apprehension to the people immediately concerned and to the government, according to reports made public by the Commerce Department's Minerals Division. Some industrial opinion in Belgium is to the effect that an even greater cause is the introduction of other sources of energy, especially petroleum products and electrical energy from waterfalls. The demand for coal to heat houses has also been reduced by the improvement of construction methods.

On March 31, 1931, the Belgian coal industry employed 172,390 operatives of all kinds, about 29,000 of this number being foreigners. It is estimated that the active operatives in coal mining form more than 10 percent of the total number of Belgian workmen (excepting agriculture).

IMMIGRATION
Lowest Since Civil War

A total of 97,139 immigrant aliens was admitted to the United States during the fiscal year ended June 30, according to Department of Labor. This compares with 241,700 for 1930, and is the first time since the Civil War that the annual immigration has fallen below 100,000.

There were 61,882 aliens departing from the United States during the fiscal year 1931 compared with 50,661 in 1930. Deportations also reached a new high mark during the 1931 fiscal year, with a total of 18,142, an increase of 1,511 over the previous year.

Immigration in the fiscal year 1931, as compared with 1930 and 1924, from some of the principal sources, was as follows:

Countries	1924	1930	1931
Total	706,896	241,700	97,139
Germany	75,091	26,569	10,401
Great Britain	59,490	31,150	9,110
Ireland	17,111	23,445	7,305
Italy	56,246	22,327	13,399
Canada	200,690	63,502	21,687
Mexico	89,336	12,703	3,333
All other	208,932	62,139	31,904

Cut in Coal Costs is Urged in Britain

Reduction of costs in the coal industry, possibly involving dismissal of 100,000 miners, has been recommended by the coal miners' reorganization commission as part of Britain's nation-wide economy movement. The report forecasts division of the nation's coal fields into six major geographical units, with only one colliery in each.

"The vital need is that costs be reduced by concentration of productive efforts," the report said. "More pits ought to work to fuller capacity, while some ought to cease altogether.

"The day of easy supremacy is gone. The supply exceeds the demand, and costs have increased by part-time work by miners. Unrestricted competition by many hundreds of independent units was well enough when we had things all our own way, but is positively self-destructive today."

Reorganization of British Coal Industry Discussed in Bulletin

Radical reorganization in Great Britain's coal industry and trade as a result of legislation passed last year is revealed in a study by American Consul John H. Bruins, which the Commerce Department has just issued as a trade bulletin.

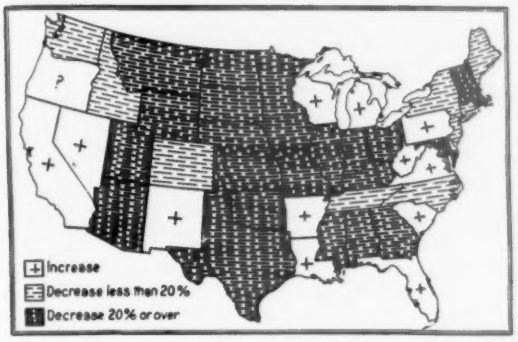
Coal, it is pointed out, forms the keystone of the British economic structure. Various post-war developments have vitally influenced the world's coal industry and trade—a situation particularly true of Great Britain. Prior to the war, coal, and chiefly British coal, was the principal steamship fuel, but post-war years have seen a large part of this bunker trade lost to fuel oil.

Recognizing the necessity of taking steps to meet changed conditions, the British Government passed in 1930 what is known as the "British Coal Mines Act." The chief purpose of this legislation was to increase the efficiency of production and distribution. As a means toward the accomplishment of this end the act fixed production quotes, regulated prices, established a uniform working day, and created a Coal Mines National Industrial Board.

While it is not believed that the British coal industry will ever regain its former preeminence, it is hoped, according to Consul Bruins, that the reorganization may serve to place the industry on a more secure economic footing. The price of the bulletin is 10 cents.

Owen D. Young, addressing graduating class of St. Lawrence University Summer School recently, stated that this country is faced with a larger number of vital problems than has ever been presented to one nation, and that America as trustee of 40 percent of the world's gold and possessor of great reservoirs of credit must fulfill its obligations. "Whether a person or a country should undertake obligations is debatable. Whether they should perform them, once undertaken, is not. If they are impossible of performance, they should be revised, but they should never be defaulted. The credit of the nation, the conduct of business, depend upon the sanctity of public and private obligations."

COMMERCIAL STOCKS OF COAL



HOW STOCKS OF BITUMINOUS COAL AT INDUSTRIAL PLANTS ON JULY 1, 1931, COMPARED WITH THOSE ON SAME DATE YEAR AGO

In comparison with the same date last year the stocks of bituminous coal held by industrial consumers (other than steel and coke works), have been reduced by nearly 10 percent. The accompanying diagram shows that with comparatively few exceptions the decline has been almost country-wide. Particularly striking is the decrease that has occurred in the states of the Middle West.

Commercial stocks of bituminous coal, used largely for industrial purposes, amounted to 30,100,000 tons on July 1, 1931, according to the quarterly survey of the Bureau of Mines. In comparison with the amount on hand at the beginning of the previous quarter, this is an increase of 600,000 tons, but is 2,100,000 tons less than the quantity in storage on the same date last year.

From 29,500,000 on April 1, stocks declined to 26,900,000 tons on May 1, a decrease of 2,600,000 tons in 30 days. With the coming of milder weather, which reduced the requirements of the domestic trade, and the seasonal contraction in the rate of industrial activity, however, consumption declined abruptly, and during May and June 3,200,000 tons were added to the commercial reserves.

Exports during the second quarter of 1931 averaged 234,000 tons a week as against 322,000 tons during the same period last year. The weekly rate of consumption within the United States during the second quarter amounted to 6,273,000 tons a week as compared with 8,868,000 tons in the previous quarter. In comparison with the same period last year the rate of home consumption plus exports shows a decrease of 18.1 percent.

In addition to the tonnage in the hands of commercial consumers there was 5,317,000 tons of bituminous coal in storage at the head of the Lakes, 1,467,000 tons standing in cars unbilled at the mines, and an unknown quantity amounting to several million tons in cars en route to destination.

Stocks of anthracite in retail yards on July 1 showed the usual seasonal increase of the amount in storage on April 1, but are slightly less than on the corresponding date of last year. Since April 1 stocks of anthracite in the hands of retail merchants have been increased by 76.3 percent and, at the rate householders were calling for hard coal in May and June, the dealers reporting had a supply equivalent to 60 days' requirements.

Complete copies of the bureau's coal stock report furnished by THE MINING CONGRESS JOURNAL *upon request.*

Pulverized Fuel on Program of Coal Conference

One of the most interesting sections of the Third International Conference on Bituminous Coal, which will be held at the Carnegie Institute of Technology, Pittsburgh, November 16-21, will be devoted to a study of fuels in locomotives and steamships. Pulverized coal will receive major attention in the discussions in this section.

While American engineers have not met with highly satisfactory results in their experimentation with pulverized coal in locomotives, German scientists are going forward with the work and have reported progress.

A study of the progress in Germany in firing with pulverized coal will be given at the conference by Richard Roosen, chief engineer of Henschel and Sohn, of Kassel. His paper will make public for the first time the results obtained by the German State Railways in actual road practice.

Five American railway men are co-authors of a paper on the classification, inspection, and preparation of railway fuel. The authors are Malcolm MacFarlane, New York Central Railroad; Lester Bosler, Madeira, Hill and Co.; Charles Dampman, Reading Co.; H. C. Woodbridge, Rochester and Pittsburgh Coal Co.; and George L. Smith, chief fuel inspector of the same company. The paper will be read by Mr. Woodbridge. F. M. Waring, engineer of tests for the Pennsylvania Railroad, will also contribute a paper on coal in locomotives.

A survey of the progress in Europe of the use of pulverized coal in steamships will be given by C. M. Stein, engineer, of Paris, France. Further discussion of pulverized fuel in steamships will be given by R. C. Brierly, engineer at the fuel-oil testing plant of the U. S. Navy at Philadelphia.

Several other papers on pulverized coal will be given. Among these is the one by Rudolf Pawlikowski, of Germany, on his coal-dust motor. Several papers on the mechanism of combustion of pulverized coal have been tentatively announced.

Other subjects to be discussed in the sectional meetings of the conference are cleaning and preparation, hydrogenation of coal, fertilizer, low and high temperature distillation, gasification of coal, combustion, smoke abatement, origin and classification of coal, and the competition between coal and natural gas, petroleum, and water power.

Fewer Fatal Accidents in Pa.

Production of coal in Pennsylvania during the first six months of 1931 was the largest for each fatal accident in the history of the state mining industry, according to figures made public by Secretary Walter H. Glasgow, of the Department of Mines.

In the first six months there were 304 fatalities in the anthracite and bituminous mines, as compared with 367 for the same period last year. This is a reduction of 63 fatalities, or 17 percent, and is partly offset by an estimated loss of tonnage of 9 percent.

The accident record in the bituminous region was the best in the history of the Department of Mines. There were 93 fatalities the first six months of 1931, or 60 fewer than for the same period last year, which had held the record for its low fatalities.

Chance of Failure in Drilling Wells Still a Hazard

Nearly one-third of all the wells drilled for oil and gas prove to be "dry holes," productive of nothing but expense. Progress has been made in the science of petroleum prospecting, and drilling practice has shown steady improvement, yet the percentage of "dusters" annually increases, according to the American Petroleum Institute.

In 1930 nearly 32 percent of all wells completed were dry. In the last five years failures have averaged 30 percent. Besides, many wells which showed initial production failed to maintain their output at a commercial rate.

But, despite the growing hazard, more than 20,000 wells are drilled annually at a cost exceeding $500,000,000. In 1930 there was a reduction decline in drilling activity, although 21,165 wells were drilled. Of these 11,577, or 54.7 percent, produced oil; 2,885, or 13.6 percent, found gas; and 6,703, or 31.7 percent, were dry.

Coal-Mine Fatalities in July

Reports received by the Bureau of Mines from state mine inspectors, covering fatal accidents at coal mines in the United States during July, 1931, showed that 105 men were killed. This was an increase of 18 over the month of June, but was a decrease of 50 from July, 1930. The production of coal during July of the present year was 33,744,000 tons, practically the same as the 33,729,000 tons mined in the preceding month of June, but a decrease of 6,595,000 tons from July, 1930. The death rate per million tons of coal produced during July was 3.11, as compared with 3.84 for July a year ago, and 2.58 for June, 1931.

Considering bituminous mines alone, the fatality rate for July was slightly higher than for June, but lower than for July, 1930, the rate being 2.92 per million tons, as compared with 2.26 for the preceding month and 3.40 for July, a year ago. There were 87 men killed in bituminous mines in July of the present year, as compared with 66 in June, 1931, and 118 in July, 1930.

In the anthracite mines of Pennsylvania 18 men lost their lives during the month, and in July a year ago 37 men were killed as compared with 21 in June, 1931. The death rates were 4.55 for July, 1931, 6.58 for July, 1930, and 4.62 for June of the present year.

Reports for the first seven months of 1931 showed a total of 838 deaths from accidents in coal mines as compared with 1,159 for the same period in 1930. While the 1931 period showed a decrease of 321 deaths, there was also a decrease in production, the tonnage for 1931 being 255,083,000 tons and that for the 1930 period being 304,563,000 tons. The death rates per million tons decreased from 3.81 in 1930 to 3.29 in 1931. The death rate for bituminous mines alone, which showed 608 fatalities for the period from January to July, 1931, was 2.77 as compared with 3.42 for the same period in 1930, when 908 deaths occurred. The difference in the anthracite records for the two periods was not so marked, that for the present year showing 230 deaths and a rate per million tons of 6.48, and 251 deaths and a rate of 6.40 for the 1930 period.

No major disaster occurred in July.

Hanna Coal Company Makes Excellent Safety Record

A reduction of 57 percent in the total number of accidents is the noteworthy achievement of the Hanna Coal Company for the first six months of 1931 as compared to the same period of last year. The goal set by company officials was a reduction of 50 percent in the number of compensable accidents during the January-June Period, as compared with half of the 240 compensable accidents of 1930. The 1931 six-month record was 55 compensable accidents, 39 non-compensable, with 928,541 tons mined, while that for the entire year 1930 was 240 compensable, 197 non-compensable, and 859,916 tons mined (tonnage for first six months).

Commenting on this record, R. L. Ireland, Jr., vice president of the company, says: "We are not proud of our number of accidents, but we are proud of the fact that we are now organized so that we are making tremendous reductions in them." The company recently held a safety picnic for all employes at Belmont, Ohio, celebrating this achievement.

Safety Congress Oct. 12 to 16

The National Safety Council will meet in Chicago October 12 to 16 for its annual safety congress, and the Mining Section will have a prominent place on the program. Rush N. Hosler is general chairman of the Mining Section, and Daniel Harrington, of the U. S. Bureau of Mines, is secretary.

Kentucky Holds First-Aid Meet

Fifty-one first-aid and mine-rescue teams participated in Kentucky's statewide first-aid and mine-rescue contest, held at Jenkins on August 15, under the direction of the Kentucky Department of Mines. The team of the Kentucky Utilities Company, at Pineville, won first place in the first-aid contest. The team representing the Black Mountain Corporation, Kenvir, was winner in the mine-rescue group and also the combination prize for the highest number of points in both first-aid and mine-rescue events.

Trophies were awarded by the National Coal Association to the winning teams of each district, as follows: Big Sandy District—mine 206, Consolidation Coal Company, Jenkins; Harlan District—Harlan Wallins Coal Corporation, Verda; Hazard District—Kenmont Coal Company, Jefferson; Southern Appalachian District — Kentucky Utilities Company, Pineville. Prizes were presented by John F. Daniel, chief of the Kentucky Department of Mines.

MODERNIZED COAL LOADING

(*From page* 429)

a few working places and a reduction in the amount of rock yardage driven. Within recent years conveyors have also been introduced for both long face and room mining. The tonnage from both of these types of loading has increased from slightly less than 2,000,000 tons in 1927 to nearly 4,000,000 tons in 1930. A number of new installations under way and contemplated indicate an increasing tonnage with mechanized loading during the coming years. One effect of this has been to increase the available anthracite acreage. A few years ago thin seams which were considered unsuitable for hand loading are now classified as commercially mineable coal.

Southern Appalachian

Coincident with the installation of mechanical loading in Illinois the southern Appalachian field began experimental operations. The first machine installations did not prove as satisfactory as had been hoped—in fact, they were quite a disappointment—so instead of carrying the experiments through to a successful conclusion the operators became discouraged and the machines were abandoned. It was said, about the year 1926, that there were 100 mobile loading machines in this district whose operation had been discontinued. These figures may not be exact, but they are approximately so. At any rate, out of the number of installations made at that time there are not more than two or three who have continued. Conveyors and scrapers had much the same history as the mobile type machine and were discontinued for the same reason.

Although the percentage of mechanized loading is very low, there are quite a number of mines using all types of equipment in the southern Appalachian field, and it is worth while noting that this district within the last year has developed two of the most successful modified long face conveyor operations in the country. Their success is pointing the way and others will unquestionably follow, because in this great coal-producing field a large proportion of the seams are very favorable for mining with some type of mechanized loading.

The factor which has prevented mechanization in the past, and is still preventing it, is the low wages paid for hand loading. The early failures came at a time when wage reductions were taking place throughout this section, and it was the combination of these two conditions which so greatly retarded the use of machines in this field. Few companies had sufficient faith in mechanized loading to make the expenditure for new experimental equipment in the face of a declining market, decreased production, and lowering wage scales.

The present situation can hardly endure much longer. Unrest throughout this field on the part of the men and discouragement on the part of the companies will undoubtedly force some sort of a reorganization and an upward revision of wage rates. When this is put into effect, mechanized loading unquestionably will proceed at a rapid pace.

WITH THE MANUFACTURERS

Control Benchboards Have Improved Design

The increased application of control benchboards in connection with the steel mill drives, transfer bridges, conveyor systems and remotely controlled haulage or lary car systems, has led the General Electric Company to introduce an improved design of benchboard construction.

In the past it has been standard practice to make up special units for each benchboard, depending on the particular design and application of that board. Recently, however, mounting schemes have been evolved which make possible the use of standard controllers, push-buttons, indicating lamps, etc. This makes the problem of maintenance a much simpler one for the user's maintenance department and reduces the time required to obtain spare parts. Furthermore, the construction allows the manufacturer to produce a board at a much lower price while equalling in merit the benchboard originally furnished.

The change in design allows the individual devices to be supported directly from the top of the board or frame. This eliminates internal supporting brackets; makes special shaft, dial plate, and stop extensions unnecessary; provides more room within the frame for wiring and inspection; and provides a much more rigid construction. Wherever possible, welding is used in the construction to increase the rigidity of the unit.

All forms of this new construction have removable backs, which facilitate assembly of the devices and provide ready access to the inside in case changes are necessary. If the benchboard is to be located with the back against the wall, it is provided with openings at both ends. The top can be either flat or sloped, depending on the preference of the user. In general, the sloping top gives a more pleasing appearance and makes the devices more accessible to the hand and eye of the operator. The new board has a much better appearance in general than the former construction.

New E C & M Motor Starter

The Electric Controller & Mfg. Company, of Cleveland, is now building a new motor starter known as the "No. 2 Type ZO across-the-line Motor Starter," a companion to the No. 1 ZO.

Like the No. 1 ZO starter, the new and larger unit is self-contained, totally enclosed in a heavy (16 gauge) pressed steel case with oil-immersed main and control circuit contacts and vapor-proof overload relays. The entire unit is of compact design, requiring little mounting space and is of dust-tight construction. These features make the No. 2 ZO safe for operation in any adverse atmospheric condition. It can be mounted in the plant alongside the motor it controls and secure a vapor-proof, dust-tight and shock-proof installation.

In designing these starters, particular attention has been given to produce a starter both quiet and efficient. This has been accomplished, the manufacturers state, by the use of a 3-pole E-shaped magnet, on the center pole of which is mounted the moisture-proof, operating coil. The upper pole of this magnet is half shaded, the middle pole not shaded, and the lower pole completely shaded. This design eliminates chattering and hum and produces a uniform pull on the armature due to two additional fluxes of different phase angles superimposed upon and out of phase with the main flux produced by the line current.

Two thermal type overload relays are used in this starter, designed to protect motors against single phase and overload conditions. The starters are tested and shipped with overload relays set to trip at 125 percent of full load motor current. This setting may be changed to any value between 100 and 150 percent by turning a small knob located on the outside of the relay cover. The relays have high heat inertia to withstand 10 to 20 times full load motor current. These elements are arranged to be easily changed so that a No. 2 type starter of one rating can be quickly converted to one of another horsepower rating.

The new starters may be used for low voltage release of low voltage protection applications. Standard, vapor-proof, or explosion-proof push buttons can be supplied for use with them.

New Monobloc Pumping Unit

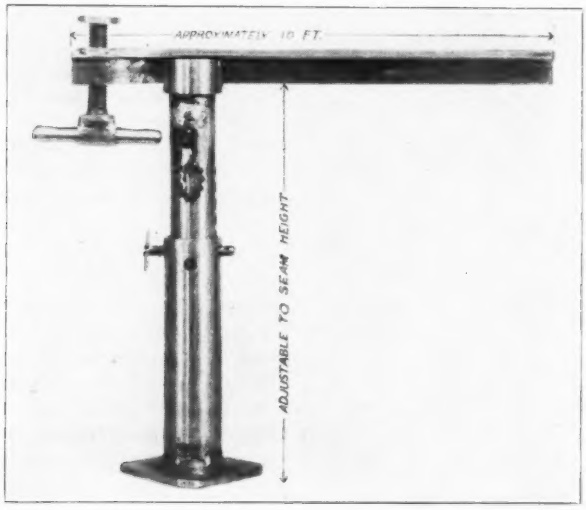
The Monobloc (Type D) centrifugal pumping unit has recently been placed on the market by the Worthington Pump and Machinery Corporation, of Harrison, N. J.

The pump, simple and rugged, is bolted to the extended motor frame and the impeller is mounted on the end of the continuous motor shaft. The bronze impeller incorporates the shaft sleeve as an integral part, this construction being one of Worthington's latest shaft protection developments. The special cadmium-plated steel locking device for the impeller; the forged bronze packing gland; and the arrangement of shaft water-throwers, are other important features.

The applications of this new unit are many, and it should be of exceptional value as a built-in part of assembled equipment for general industrial service.

Adjustable Roof Jack Embodies Cantilever Principle

An adjustable screw jack with cantilever beam has been designed by the Central Mine Equipment Company of St. Louis for use in coal mines as a roof support. Particularly, it is designed to give ample working room at and adjacent to the working face.



The entire construction is of steel and the jack is composed of three major parts—the external lower section of 4-in. extra heavy pipe to which is welded a rounded steel base 8 in. by 8 in. by 1 in.; the internal section made of 3-in. extra heavy pipe with a grooved head plug; and the cantilever beam approximately 10 ft. long, composed of two 2-in. by 3-in. angles welded together, which fit into the head plug groove.

In addition to the major parts, a 1¼-in. adjusting pin is used which controls the total height; a release wedge (not ordinarily needed) for use in taking down in case removal is desired after a considerable weight has settled on the steel cantilever. The only other parts are a rivet projecting through the internal 3-in. pipe into a slot cut in the grooved head, which prevents the loss of the head, and a chain or small cable attached to the release key to prevent loss.

The method of setting the adjustable jack is as follows:

(1) Set the assembled pipe sections vertically, base down, leaving enough room for the cantilever beam. Adjust to required height of seam by adjusting pin.

(2) Lean the unit forward and slide the cantilever beam into the grooved head. Adjust so that approximately 3 ft. will project away from the face to be protected and 6½ ft. toward the face. (This can be varied at will and is used only as an example.)

(3) Raise the jack to vertical and then drive wedges or cap boards over the cantilever beam or between beam and roof. Wedge firmly.

(4) Tighten the screw jack, which will be on the end of the beam away from the face.

(5) The long or face end of the cantilever beam now touches the low spots in the roof toward the face. Drive any additional wedges or cap boards at intervals between the top of the beam and the roof. Wedge firmly in place so that the beam is under deflecting strain.

To take down the jack it is usually only necessary to back out the wedges over the grooved head and lower to the footwall. In case of weight settling on the unit, a sharp blow on the release wedge will allow this part to be backed out and the head will drop one-half inch.

In pointing out the advantages of this jack from a time and labor saving standpoint, the manufacturers cite the following example, where conveyors or scrapers are in use: "With conveyors one of the operations that has been extensive and time consuming in the past is moving the conveyor forward where roof was tender and the conveyor had to be torn down and moved through a timber line. This adjustable jack will eliminate this time-consuming operation, as the cantilever feature will allow protection from the gob side of the conveyor to the solid coal face."

The manufacturers have named this unit the "L & H All Steel Adjustable Cantilever Screw Jack," and patents have been applied for. Additional information may be obtained from the Central Mine Equipment Company, Railway Exchange Building, St. Louis, Mo.

New Solenoid-Operated Valve Announced by General Electric

A new solenoid-operated valve, designated CR-9507-A1, for controlling liquids and gases under pressure has been announced by the General Electric Company. Some of the many uses for which the new valve is designed are: For operating steam or air whistles, for controlling the flow of brine through cooling pipes in cold-torage rooms, for remotely or automatically controlling the supply of oil or gas to furnaces, for automatically controlling the flow of liquids in connection with weighing machines, and for controlling the flow of water in cooling jackets on compressors.

The valve body is made of high-grade castings in two sections with the upper section fastened to the lower by bolts. The threads for the pipe connection are standard pipe threads. An arrow on the upper body casting indicates the direction of flow.

The gland connected to the operating mechanism is of the rotary type which reduces the friction load. The seat and poppet are carefully ground to fit and only high-grade materials, suitable for liquid or gas that is to be controlled, are used. The material is distributed so that a wide seat is obtained, giving long life and reliable operation. The valves can be made normally open or normally closed, in the field, by drilling the mounting holes in the case and transferring the solenoid and operating mechanisms to the opposite side. The valves are of the unbalanced type and require little power for operation. A standard solenoid is used. All of the coils are designed for continuous duty and the solenoids are selected so that there is ample power for operation. The operating mechanism is so arranged that the solenoid plunger is permitted to accelerate without load for a fraction of the stroke, thereby effecting quick, reliable operation.

A sheet-metal case with a hinged cover encloses the solenoid and operating mechanism. Suitable knockouts are provided in the case for conduit connection.

The Fusion Welding Corporation, Chicago, has appointed the Puritan Compressed Gas Corporation, of Kansas City, Mo., as distributors for their line of welding rods. The territory served will include the State of Kansas and the western portion of Missouri.

New Hand-Rotated Stoper

A new hand-rotated stoper, the model H-81, is being offered the mining industry by the Gardner-Denver Company, Quincy, Ill. For this stoper the manufacturers claim high-drilling speed, low air consumption, and little upkeep cost.

The hammer is of single diameter, reversible block type construction, designed for long life, and the tubular automatic valve is located in the back of the cylinder, giving the machine a smooth exterior. The side rods are designed so that the air-feed cylinder can be removed without disturbing the assembly of the other parts of the drill, providing a simple method of changing the water tube. The feed piston has one cap rubber in place of two cup leathers, and the head of the piston is surrounded by a long brass follower, which is renewable and prevents the whip of the machine on the air feed.

Pump for Handling Abrasive Materials

The American Manganese Steel Company, Chicago Heights, Ill., have recently added the new Type "C" to their line of abrasive materials handling pumps made of AMSCO manganese steel.

Many new features have been included in these units. Bearings are interchangeable in the field, either sleeve or anti-friction types being available; lubrication is required only on main bearings (except where outboard bearings are used); impeller clearance and main bearings can be adjusted easily without dismantling; thrust and radial shocks are completely absorbed by new bearing arrangement.

Worthington Pumps Acquires Metalweld, Inc.

The Worthington Pump and Machinery Corporation has acquired the manufacturing and marketing facilities of Metalweld, Inc., Philadelphia, Pa., builders of a complete line of portable compressor units. For many years Worthington has been a leader in the compressor industry. Last year it took over the manufacture and sale of Gilman rock drills and accessories. This, together with the added line of portable and semi-portable compressors and other tools, will enable them to supply all air equipment requirements of contractors, railroads, utilities, and industrial users.

Worthington's Feather Valve compressors always have been an integral part of Metalweld portable units. The portable compressors will be manufactured at the Harrison, N. J., works of the Worthington Pump and Machinery Corporation, and the engineering, manufacturing, and sales personnel of the Metalweld organization also will be located there.

Walter C. Shunk Now Chief Mining Engineer for Goodman Manufacturing Company

WE recently announced the appointment of Walter C. Shunk as chief mining engineer of the Goodman Manufacturing Company, succeeding the late Sidney W. Farnham. Mr. Shunk is yet a comparatively young man but has had relatively long experience in the coal mining industry. His experience began in 1902 as an office boy with the Davis Coal & Coke Company at Thomas, W. Va. In 1904 he was employed by the Consolidation Coal Company in the Somerset, Pa., division as electrician's helper until 1908, when transferred to the Fairmount, W. Va., division.

In 1909, when development of the Consolidation properties started in the eastern Kentucky field, he was transferred to Van Lear, Ky., as division superintendent of the power and mechanical department in charge of constructing the central power station, sub-stations and electrification of the four original mines developed there. In 1912 he was transferred to the operating department at Jenkins, Ky., as mine superintendent in charge of two operations.

In August, 1914, he entered the employ of the Stonega Coke & Coal Company, Big Stone Gap, Va., as superintendent of power, planning and supervising the installation of a new power arrangement, replacing isolated power plants, consisting of 15 underground and surface substations serving seven collieries. Under his supervision the electrical and mechanical department was highly systematized, the personnel trained, classified equipment standardized and modern central shop facilities provided for economical maintenance. His close contact and cooperation in the interest of his employers, with engineers and designers of equipment manufacturers prompted a number of the electrical and mechanical improvements in mining locomotives, cutting machines and other mining equipment during the past 18 years.

Mr. Shunk originated the application of the contactor control on mining locomotives, the first being an improvised one selected and made up of commercial contactors, street railway master controller and a special reverser furnished by one of the large manufacturers. A proving trial period of this original control briefly preceded the installation of 300 of the early improved controls of this type on 15-ton haulage locomotives at Stonega.

Administering for several years to the characteristic and chronic commutation ailments of the preceding type three phase cast iron frame "Rotary Converter," rugged only in its bulkiness, Mr. Shunk persuaded the engineering and executive personnel of a manufacturer to incorporate certain improvements in the design of this particular machine which, by adoption as standard manufacturing practice, have since avoided many delays in the movement of coal from the face to the railroad car. After 15 years of unusually hard service, the original improved machines are today functioning efficiently at low upkeep cost.

Upon completion of the central station power arrangement of the Stonega properties Mr. Shunk was made superintendent in charge of their largest producing colliery at Roda, Va., in 1917. Following this came his appointment in 1919 to the position of general superintendent, which continued until 1924, then succeeding to the appointment as general manager of the company's nine collieries and subsidiary interests in Virginia, continuing successfully in this position until the end of 1929.

Having had a combination of electrical, mechanical and mining experience peculiarly fitting him for the position, he accepted the district managership of the Pittsburgh office territory of the Goodman Manufacturing Company, locating at Pittsburgh, Pa., January 1, 1930. During his connection there considerable time was spent in the Pennsylvania anthracite field concerning mechanical mining problems and applications. April 1, this year, he was appointed mining engineer and removed to the factory and executive offices of the company at Chicago, engaged in consulting and sales engineering.

Mr. Shunk has for several years been active in Mining Congress activities, serving on the mine ventilation and standardization committees and contributing to convention programs. He enjoys wide acquaintance in the southern and eastern coal fraternities and the personnel of manufacturing organizations serving the industry.

Timken Bearings for 150 Pennsylvania Locomotives

An order has been received by The Timken Roller Bearing Company, Canton, Ohio, for the bearings for 150 of the new electric locomotives to be built for the Pennsylvania Railroad for their electrification project between New York and Washington. It is by far the largest order for anti-friction bearings ever placed by any railroad at any one time.

The order includes tapered roller bearings for all of the engine trucks and the driver wheels. Ninety of these locomotives are for passenger service and 60 for freight service.

Heretofore electric locomotives have been equipped with plain bearings, and this order indicates that the use of anti-friction bearings on electric locomotives will become universal.

About two years ago the Timken Company had built one of the highest grade steam locomotives in the world, equipped throughout with Timken bearings, including the main journals—the first locomotive in the world that has ever been equipped throughout with anti-friction bearings. This locomotive has been tested for a year and a half on 11 railroads. It has already gone over 75,000 miles, has been handled by over 500 different train crews, and has shown superb results. The bearings are as perfect as the day they were put out.

History of Explosives Industry

The "History of the Explosives Industry in America" is on exhibition in the Du Pont exhibit on the boardwalk at Atlantic City. This book puts the explosives industry in review for nearly a century and a half and interestingly traces explosives back to their beginnings centuries ago. The place of explosives in war and peace, with particular reference to the essential part they have played in building America reveals many little known facts. The 1,152 pages are illustrated with more than 500 illustrations, a number of which are of rare historical value. It is from the Columbia University Press, New York, and was written by Arthur Pine Van Gelder and Hugo Schlatter, two nationally known explosives chemists, under the auspices of the Institute of Makers of Explosives.

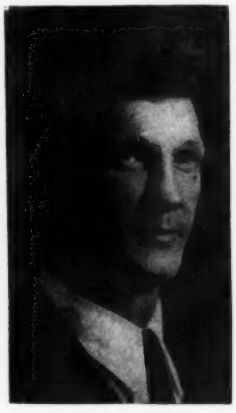
Machinery Exports at Constant Level

Stabilizing tendencies in the industrial machinery export trade of the United States are indicated by the fact that during the past few months the total values have remained at a remarkably constant level, according to the Commerce Department's Industrial Machinery Division.

Five out of the past six monthly export totals have been maintained between $12,000,000 and $12,700,000, official statistics show. Although these totals are below those of the corresponding periods of last year, when viewed from the standpoint of normal activity in this line they present a more encouraging situation, and the even pace of the current year is an indication of stabilizing influences.

Davis Heads Westinghouse Apparatus Advertising

R. R. Davis, who has directed in the past 21 years various Westinghouse advertising activities, has been appointed apparatus advertising manager of the Westinghouse Electric and Manufacturing Company at East Pittsburgh. He will have charge of all apparatus advertising activities of the company except the merchandising department, headquarters for which are located at Manfield, Ohio.



His service with the company started in 1905, immediately following his graduation as an electrical engineer from the Western University of Pennsylvania, now the University of Pittsburgh. Following five years' experience in engineering, sales, and management, he went to Philadelphia as an advisory engineer and salesman.

In 1910 he became associated with the Westinghouse advertising department, and in the ensuing period had directed the activities and had executive control of most of its divisions. In 1925 he was named assistant to manager of the department and last year became editor in chief.

New Wire Rope Catalog

"Roebling Wire Rope and Wire" is the title of a 280-page catalog, pocket size, just issued by John A. Roebling's Sons Company, Trenton, N. J. The book is compiled as a convenient reference to assist in solving all wire rope problems, and is well bound and illustrated throughout. It outlines in detail grades, constructions, sizes, and applications of various ropes suitable for all purposes. Typical of the useful information contained in the book are the illustrated instructions for making rope splices.

Tramway Builders Consolidate

The tramway department of the Broderick & Bascom Rope Company (B & B Aerial Tramways) has been consolidated with the Interstate Equipment Corporation of New York, manufacturers of "Automatic Aerial Tramways." Both systems will hereafter be handled through the tramway department of the Interstate Corporation.

B & B aerial tramways are widely known throughout the mining and quarrying fields, and have been manufactured by the Broderick & Bascom Rope Company at St. Louis. F. W. Grice, who has been in charge of the tramway department for the Rope Company, will retain his affiliation under the new management, making his headquarters at St. Louis.

The consolidation of these two distinct types of tramways makes available through one organization the special features of both systems. Both will be manufactured at Roanoke, Va., under the direction of C. W. Bishop, shop superintendent. General offices of the tramway department of the Interstate Equipment Corporation are at 25 Church Street, New York City.

The New River Company, MacDonald, W. Va., recently awarded contract to the Interstate Equipment Corporation, New York City, for the installation of an aerial tramway for the disposal of mine refuse at their Lochgelly mine. Tramway will be 2,000 ft. long with an hourly capacity of 60 tons.

The West Virginia Coal & Coke Corporation, Omar, W. Va., has also awarded contract to the Interstate Corportation for aerial tramway equipment to complete their mine refuse disposal system at their Rossmore mine. Length of tramway 1,000 ft, capacity 30 tons per hour.

Seamless Steel Pipe Fittings

An illustrated catalog of seamless steel pipe fittings for welding has been issued by the Taylor Forge & Pipe Works of Chicago. These forge fittings have been developed to fill the need for suitable fittings for welding, making it possible to attain uniform strength and proper flow conditions in a welded system of pipe. Practical installations and comparisons are included in the catalog in addition to tables giving prices, specifications, etc.

E. O. Williams, associated for the past 16 years with the transmission and industrial chain trade in various sales capacities, and formerly manager of the Howe Chain Company, has been placed in charge of the Philadelphia office of The Union Chain & Mfg. Co., Bourse Building, Philadelphia.

HEAVY DUTY FROG

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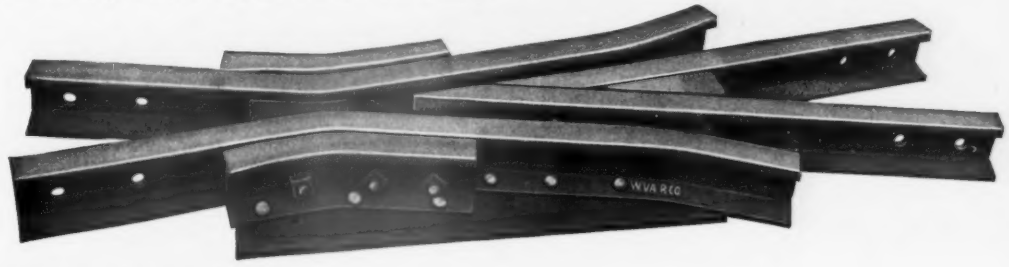

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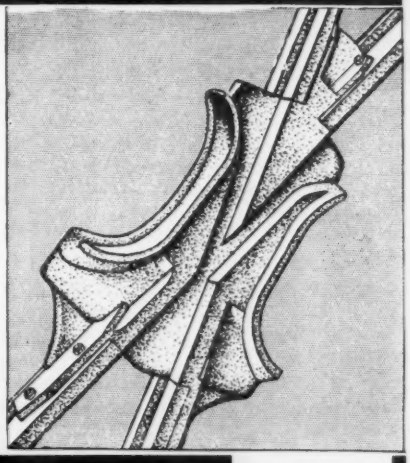

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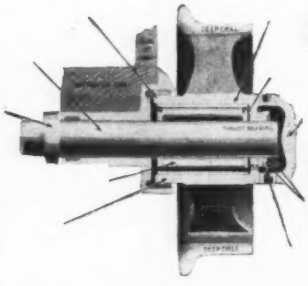

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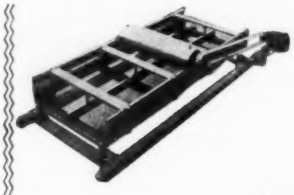

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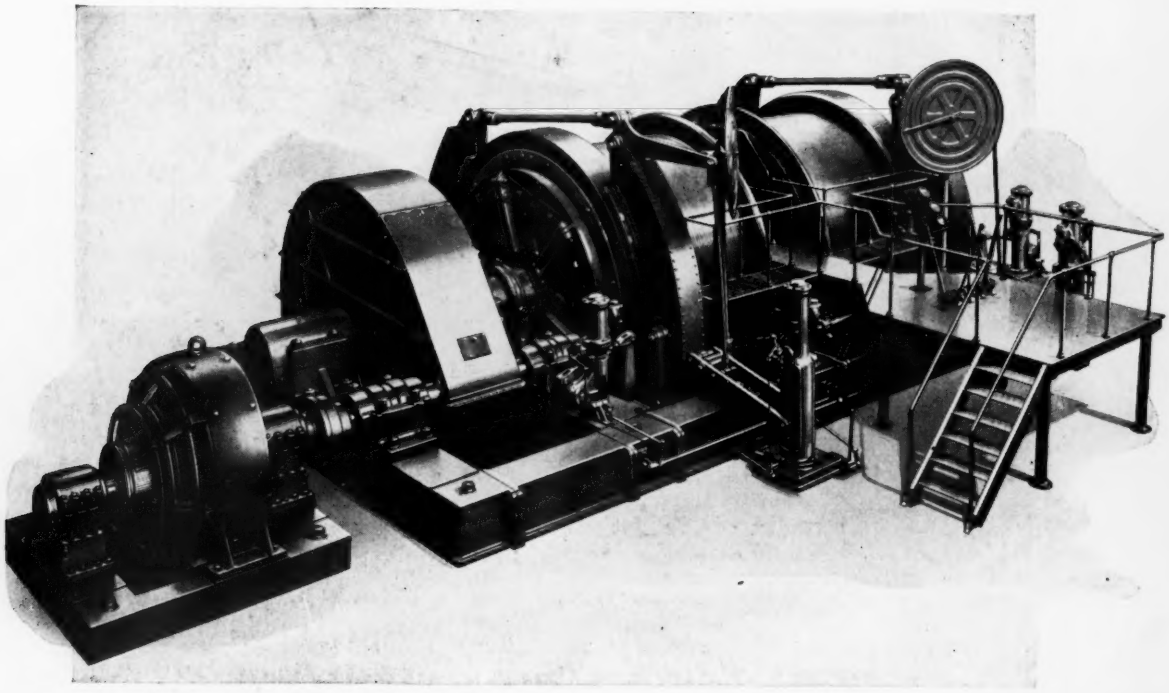

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. . . Change made over week end from steam operation using reels and flat rope to electric operation with new hoist — no delay in production.

Calumet and Arizona Mining Company's new double drum hoist is operating at Junction Shaft. This new unit is the third large Allis-Chalmers hoist purchased by this company and is the most modern electric hoist of its type in Arizona. It will wind 5225 of 1½ inch rope in three layers. Power is supplied by a 1500 h.p. Allis-Chalmers direct current motor supported from a 1250 k.w. flywheel motor generator set. The drum shells are of the welded plate steel construction pioneered by Allis-Chalmers.

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Principal Data of this Hoist

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Maximum rope speed	2000 f.p.m.
Weight of skip	8000 lbs.
Weight of two suspended cages	5000 lbs.
Weight of ore	11000 lbs.
5000 ft. 1½ inch rope	20000 lbs.
Drums	12′-0″ diam. 6′-0″ face.
Brakes and clutches	14′-0″ diam.

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